Vol. V

TRANSCRIPT OF RECORD

(Pages 1995 to 2494)

Supreme Court of the United States

OCTOBER TERM, 1943

No. 392

UNIVERSAL OIL PRODUCTS COMPANY,
PETITIONER,

vs.

GLOBE OIL & REFINING COMPANY

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT

PETITION FOR CERTIORARI FILED SEPTEMBER 28, 1943.

CERTIORARI GRANTED NOVEMBER 15, 1943.

VOL. V pp. 1995 to 2494.

TRANSCRIPT OF RECORD

IN THE

Supreme Court of the United States

OCTOBER TERM, A. D. 1942.

No. 332

UNIVERSAL OIL PRODUCTS COMPANY,
Petitioner,

vs.

GLOBE OIL & REFINING COMPANY,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT.

THE BLAKELY-WARREN PRINTING COMPANY, 310 WEST JACKSON, CHICAGO

IN THE

Supreme Court of the United States

OCTOBER TERM, A. D. 1942.

No. 392

UNIVERSAL OIL PRODUCTS COMPANY,

Petitioner,

vs.

GLOBE OIL & REFINING COMPANY,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT.

INDEX.

Index to proceedings in U. S. District Court i

Clerk's Certificate to Volume 1 of printed record of proceedings in U. S. District Court 550a

Clerk's Certificate to Volume 2 of printed record of proceedings in U. S. District Court 1022a

Clerk's Certificate to Volume 3 of printed record of proceedings in U. S. District Court 1504

Clerk's Certificate to Volume 4 of printed record of proceedings in U. S. District Court 1994

Clerk's Certificate to Volume 5 of printed record of proceedings in U. S. District Court 2494

Clerk's Certificate to Volume 6 of printed record of proceedings in U. S. District Court 3084a

Clerk's Certificate to Volume 7 of printed record of proceedings in U. S. District Court 3569

Index to proceedings in U. S. Court of Appeals:

- Placita 3571
- Appearance for Appellant, filed Jan. 14, 1942 3572
- Appearance for Appellee, filed Jan. 19, 1942 3573
- Order taking cause under advisement, entered May 3, 1943 3574
- Opinion by Evans, J., filed June 30, 1943 3575
- Judgment affirming, entered June 30, 1943 3585
- Reference to issuance of Mandate 3585
- Clerk's Certificate 3587

VOL. V pp. 1995 to 2493.

TRANSCRIPT OF RECORD

In the

United States Circuit Court of Appeals

For the Seventh Circuit

No. 7912

UNIVERSAL OIL PRODUCTS COMPANY,
Plaintiff-Appellant,

vs.

GLOBE OIL & REFINING COMPANY,
Defendant-Appellee.

Appeal from the District Court of the United States for the Northern District of Illinois, Eastern Division.

THE BLAKELY-WARREN PRINTING COMPANY, 219 WEST JACKSON, CHICAGO

DOCKETED JAN. 14, 1942.
TRANSCRIPT FILED APRIL 2, 1942

In the

United States Circuit Court of Appeals

For the Seventh Circuit

No. 7912

UNIVERSAL OIL PRODUCTS COMPANY,
Plaintiff-Appellant,

vs.

GLOBE OIL & REFINING COMPANY,
Defendant-Appellee.

Appeal from the District Court of the United States for the Northern District of Illinois, Eastern Division.

INDEX.

Certificate of counsel as to abstract of record..... 1

Docket Entries 1

Bill of Complaint, filed July 22, 1931..... 15

Statement of stipulation re Winkler-Kock Eng. Co..... 23

Answer, filed Mar. 2, 1932..... 23

Statement of stipulation re substitution of parties plaintiff, etc. 37

Amendment to Answer, filed May 11, 1932..... 38

Agreed statement as to exhibits..... 39

EXCERPTS FROM EVIDENCE ON RES ADJUDICATA ISSUE.

Plaintiff's Witnesses.

Testimony of:

Dunham, Robert J., Sr..... 39

Hamilton, David Phillip..... 40

Heil, Henry F..... 42

Koch, Fred C..... 43

Lamprecht, William Henry, II..... 41

Stipulation re expenditures, etc..... 44

Defendant's Witness.

Testimony of:

O'Shaughnessy, I. A..... 52

Motion to dismiss complaint and amendments on the ground of unclean hands, filed Jan. 4, 1938..... 57

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1502; Vol. IV, pp. 1503 to 1992; Vol. V, pp. 1993 to 2492; Vol. VI, pp. 2493 to 3084; Vol. VII, pp. 3085 to 3567.

ABSTRACT OF PROCEEDINGS ON MOTION TO DISMISS COMPLAINT FOR UNCLEAN HANDS.

Statement by Mr. Von Holst 58
Affidavit of J. Bernhard Thiess (Read in) 58
Colloquy 62

Amendment to Answer, filed Jan. 5, 1938 66
Petition for Subpoena Duces Tecum to Behimer, filed Jan. 5, 1938 71
Petition for Subpoena Duces Tecum to Plaintiff, filed Jan. 17, 1938 74
Stipulation re hearings on Subpoenas 77
Interrogatories propounded to Plaintiff, filed Jan. 14, 1938 78
Stipulation re hearing on Interrogatories 79
Plaintiff's Answers to Interrogatories 80
Amendment to Answer, filed Feb. 9, 1938 81
Motion of Defendant to produce records, filed June 2, 1938 81
Petition for Subpoena Duces Tecum to Beyt, filed June 28, 1938 83

STATEMENT OF EVIDENCE ON ISSUE OF UNCLEAN HANDS.

Colloquy 283, 367

Defendant's Witnesses.

Testimony of:
Behimer, Otto 290
Beyt, Maurice S. 347
Brunow, G. H. 108
Danciger, Joseph 100
Dearborn, Richard J. (Deposition of) 182

Vol. I, pp. 1 to 880; Vol. II, pp. 881 to 1082; Vol. III, pp. 1083 to 1805; Vol. IV, pp. 1806 to 1995; Vol. V, pp. 1996 to 2482; Vol. VI, pp. 2483 to 3084; Vol. VII, pp. 3085 to 3947.

Egeler, Mary 168
Hock, W. C..... 105
Murray, R. L..... 176
Ringolsky, I. J..... 85
Stratford, William Malcolm (Deposition of)..... 243
Thompson, Lloyd H..... 170
Wannack, Otto 249
Ward, H. A..... 123
White, G. D..... 135

PLAINTIFF'S WITNESSES.

Testimony of:
Behrens, W. Meredith..... 384
Dubbs, Carbon P..... 391
Dunham, Robert J., Sr..... 440
Halle, Hiram J..... 376
Hoffman, Dr. Harry R..... 456
Norbury, Dr. Frank Garn..... 451
Documentary Evidence 267
Opinion on Unclean Hands, dated July 27, 1938..... 460
Findings of Fact and Conclusions of Law..... 463
Order overruling motion to dismiss on ground of unclean hands, entered Aug. 2, 1938..... 469
Amendment to Answer, filed Jan. 4, 1940..... 470
Certificate of Counsel to Abstract of Testimony on Merits 470

ABSTRACT OF TESTIMONY ON MERITS.

Stipulation as to certain facts..... 471
Plaintiff's Exhibit A—Flow Sheet of Defendant's process for cracking petroleum..... 475
Plaintiff's Exhibit B—Analysis Sheet..... 477
Plaintiff's Exhibit C—Analysis Sheet..... 478
Stipulation as to certain documents..... 480

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1502; Vol. IV, pp. 1503 to 1992; Vol. V, pp. 1993 to 2492; Vol. VI, pp. 2493 to 3064; Vol. VII, pp. 3065 to 3567.

PLAINTIFF'S WITNESSES.

Testimony of:

Brown, Dr. George Granger.....634, 1363
Carter, Macauley 595
Hanna, Richard W. (Deposition of)..... 553
Healy, Francis J.....1500
Huff, L. C..... 599
Lenske, Bernard G..... 598
Mechling, Dean G.....1349
Moore, Louis C. (Deposition of)..... 485
Perdew, W. E. (Deposition of)..... 629
Pyzel, Daniel (Deposition of)..... 505
Reid, William E. (Deposition of)..... 504
Tabor, George H.....1347

DEFENDANT'S WITNESSES.

Testimony of:

Backus, Lon E. (Deposition of)..... 830
Bailey, A. S.....1012
Behimer, Otto 868
Cady, Dr. H. P..... 788
Detwiler, James G.....1004
De Florenz, Luis (Deposition of)..... 846
Donaldson, William T..... 997
Ede, Henry M..... 816
Elliott, Walter H.....1051
Holmes, Ralph C..... 959
Hooker, Forney G..... 809
Mackenzie, Kenneth G.....1023
McCarthy, John S.....1054
Reiman, Dr. Clarence K.....1174
Schneider, Ben R.....1049
Smith, Harris A..... 982
Smith, Howard V.....1056

Agreed Statement as to Introduction of Exhibits.....1505

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1502; Vol. IV, pp. 1503 to 1992; Vol. V, pp. 1993 to 2482; Vol. VI, pp. 2483 to 3004; Vol. VII, pp. 3005 to 3567.

PLAINTIFF'S EXHIBITS.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
A—Correspondence (3 letters) between Dearborn and Behimer	1	230		
B—Thiess Agreement, Nov. 10, 1935, Re Witnesses	1	232	4	1505
1—Copy of tentative settlement agreement—U. O. P. and Danciger	1	385		
2—Letter, March 2, 1938, Wannack to Dubbs	1	262		
4—Letter, March 29, 1938, Dubbs to Wannack	1	263		
5—Letter, Dec. 20, 1932, Behimer to U. O. P.	1	281		
6—Letter, Jan. 14, 1927, Scullin to Behimer	1	333		
7—Letter, June 20, 1917, Detwiler to Manley (see DX 759)	1	325		
8—Letter, Aug. 10, 1917, Behimer to Manley	1	326		
	2	943		
9—Letter, Aug. 13, 1917, Behimer to Manley	1	326		
	2	944		
10—Letter, Aug. 10, 1917, Behimer to Manley	1	326		
	2	906		
11—Copy of Behren's memorandum on Keystone Driller case and Ringolsky's memo to Behrens	1	389		

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1082; Vol. III, pp. 1083 to 1502; Vol. IV, pp. 1503 to 1993; Vol. V, pp. 1995 to 2482; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
12—Letter of resignation, Dec. 12, 1926, Wannack to Dubbs	1	402		
13—Letter, Sept. 16, 1931, Wannack to Walter (Hermsdorf)	1	437		
80—License Agreement, Feb. 21, 1930, between Winkler-Koch Engineering Co. and Globe Oil and Refining Co. (Illinois)	1	43		
83—Letter, May 1927, Perdew to Halle	1	630		
116—Letter, Feb. 26, 1929, Jehle to O'Shaughnessy	1	54		
120—Letter, Jan. 22, 1932, W. P. Z. German to refiners in Winkler-Koch Patent Co. Defense Fund	1	55		
500—Dubbs Patent 1,392,629	2	652	7	3086
501—Certified copy of File Wrapper of Dubbs patent 1,392,629 (does not include reference patents, See DX 813)	2	652	4	1508
502—Egloff Patent 1,537,593	2	666	7	3094
503—Certified Copy of File Wrapper of Egloff patent 1,537,593 (does not include reference patents, See DX 814)			4	1618
504—Diagram of Burton sheel still	1	486	4	1697
505A—Diagram of Burton-Clark tube still	1	489	4	1699
506—Diagram of Fig. 2 of Trumble Patent 1,281,884			4	1701
507—Diagram of Fig. 1 of Halloran Patent 1,765,976			4	1703

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
508—Stipulated flow diagram of Defendant's operation at Lemont, Illinois	2	670	4	1705
509—Perspective drawing in color of Dubbs patent 1,392,629	2	652	4	1707
510—Drawing of Egloff patent 1,537,593	2	666	4	1709
511—Model of Dubbs patent 1,392,629	2	652		
513—Diagram of Holmes-Manley installation, p. 337 of "Handbook for Petroleum, Asphalt and Natural Gas, Bulletin No. 25, Revised 1928" published by Kansas City Testing Laboratory	1	490	4	1711
514—Burton Patent 1,049,667			7	3150
515—Trade Standards in the Pump Industry—flyleaf and p. 6	1	504	4	1713
516—Worthington Pump & Machinery Co. catalog—flyleaf and pp. 14, 15, 16 17, 28, 29, 44 and 45	1	504	4	1717
517—Distillation samples of petroleum	2	645		
518—Cracking samples of petroleum	2	652		
519—Perspective flow diagram of Dubbs unit #2 at Independence, Kansas	1 2	507 688	4	1727
520—Letter, Oct. 6, 1919, Pyzel to Van der Gracht, unsigned	1	510	4	1729
521A—Agreement between U. O. P. and Roxana, dated Dec. 12, 1919			4	1734
521B—Agreement between U. O. P. and Roxana, dated Dec. 22, 1919			4	1737

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1502; Vol. IV, pp. 1503 to 1992; Vol. V, pp. 1993 to 2492; Vol. VI, pp. 2493 to 3064; Vol. VII, pp. 3065 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
521C—Abstract of agreement between U. O. P. and DeBataafsche Pet. Co., dated March 31, 1925	1	524	4	1742
522—Two drawings of Dubbs #1 unit at Roxana	1	512	4	1745
523—Flow sheet of Roxana-Dubbs unit #1-a	1	513	4	1755
524—Flow chart of Dubbs unit #2	1	514		
	2	692	4	1757
532—Halloran and Strout Patent 1,765,976			7	3486
533—Excerpt from letter, Hanna to Mason and Halloran, Oct. 4, 1923	2	555		
534—Abstract of letter, Hamilton to Hanna, Sept. 8, 1923	2	555		
535—Letter, Hamilton to Hanna, Oct. 1, 1923	2	555	4	1759
536—Colored flow diagram of Richmond still referred to in PX 535	2	556	4	1761
537—Dubbs Patent 1,488,325			7	3416
538—Letter, Adams to Hanna, July 8, 1924	2	556	4	1763
539—Excerpt from letter, Lyon to Adams, June 12, 1924	2	556		
540—Abstract of license agreement, Aug. 15, 1924, between U. O. P. and Standard Oil Co. (Calif.)	2	557		
541—Abstract of agreement between U. O. P. and Standard Oil of California, re Test and Escrow	2	557		

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1502; Vol. IV, pp. 1503 to 1993; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
542—Abstract of supplemental License Agreement between U. O. P. and Standard, Aug. 15, 1924	2	558		
543—Abstract of agreement, re Sale of Inventions of Standard to U. O. P.	2	558		
544—Abstract of letter, Halle to Standard Oil, Aug. 15, 1924, re Scope of License	2	558		
545—Abstract of letter, Halle to Standard Oil, Aug. 15, 1924—excluding certain charging stock from royalty	2	558		
546—Abstract of letter, Halle, U. O. P. to Standard—April 27, 1925	2	558		
547—Abstract of letter, Halle, U. O. P. to Standard—April 30, 1925	2	558		
548—Abstract of letter, Halle, U. O. P. to Standard—March 1, 1926	2	558		
549—Abstract of letter, Halle, U. O. P. to Standard—Jan. 29, 1929	2	559		
550—Flow diagram of Dubbs flashing operation (Unit No. 1), Standard of California	2	559	4	1765
551A—Photographs of Dubbs Unit No. 551B 1, Standard of California	2	559	4	1767
552—Excerpts from Certified copy of File Wrapper of Halloran & Strout application, Serial No. 176,990 (now Patent 2,070,124)	2	560	4	1771
566—Notice of Suit filed Jan. 26, 1926, U. O. P. v. Texas Co.			4	1789

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1503; Vol. IV, pp. 1505 to 1993; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
567—Notice of commencement of action, of Jan. 28, 1926, U. O. P. v. Standard Oil (of Ind.)			4	1790
568—Notice of suit filed April 11, 1930, U. O. P. v. Standard of N. J.			4	1791
569—Abstract of license Agreement between U. O. P. and Mid-Continent, dated Jan. 1, 1936	2	595		
570—Abstract of agreement, dated Jan. 1, 1936, between U. O. P. and Mid-Continent, giving right to cancel	2	595		
571—Abstract of letter of cancellation, Mid-Continent to Universal, Aug. 31, 1938	2	596		
572—Abstract of statement of Royalties from 1922 to 1930 from Shell and Standard	2	597		
573—Abstract of statement of Royalties from other than Shell and Standard	2	597		
574—Abstract of statement of monies paid to Shell and Standard by way of rebate on purchase of patents	2	597		
575—Abstract of stipulation in U. O. P. v. Root, re Licensees of U. O. P.	2	598		
576—Journal entry of payment for paid up royalty by Shell and Standard of Cal.	2	598		
577—Simplified flow sheet of Roxana No. 1 at Dubbs Still	2	600	4	1793

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1505; Vol. IV, pp. 1506 to 1992; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
579A—Drawing 621 F of Dubbs unit No. 1 at Roxana	2	604	4	1795
579B—Drawing 690 F of Dubbs unit No. 1 at Roxana	2	604	4	1797
579C—Drawing 691 F of Dubbs unit No. 1 at Roxana	2	604	4	1799
580—Drawing 756 F of Dubbs No. 2 at Roxana	2	606	4	1801
580A—Drawing 862 F of Dubbs No. 2 at Roxana	2	606	4	1803
580B—Drawing 755 I of Dubbs No. 2 at Roxana	2	606	4	1805
580C—Drawing 933 G of Dubbs No. 2 at Roxana	2	606	4	1807
580D—Drawing 867 F of Dubbs No. 2 at Roxana	2	606	4	1809
580E—Drawing 866 F of Dubbs No. 2 at Roxana	2	606	4	1811
580F—Drawing 863 F of Dubbs No. 2 at Roxana	2	606	4	1813
581—Model of Standard 500 bbl. Dubbs unit	2	608 693		
582—Tabulation of standard Dubbs units constructed, showing gravity feed units separately from forced feed units	2	613	4	1814
583—Summary of Run 90, Unit #2, Roxana, Arkansas City	2	614 688	4	1816

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1502; Vol. IV, pp. 1503 to 1992; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
584—Summary of Run #4B of Plant #2 at Arkansas City	2	614 689	4	1817
585—Summary of two Runs on Units #1 and #2 at Waite-Phillips Co.	2	615	4	1818
586—Schedule of number of licensees of U. O. P. and their thruput from 1922 to 1929	2	615	4	1818
587—Dubbs Licensees, number of units of each, and cost thereof for stills built and under construction as of Dec. 31, 1929	2	615	4	1820
597—Twenty run sheets for No 2 Dubbs unit of Independence operation made for Western Refiners Committee	2	687	4	1823
598—Flow diagram of Defendant's operation, with additional operating conditions in red, taken from the Root operation	2	695	4	1863
636—Letter, May 5, 1917, Mackenzie to Holmes, re Cost of Hall installation	2	1046		
637—Bayonne Hall operation, accountants' tabulation of products. Nov. 22, 1916 to June 1, 1917	2 3	976 1046	4	1865
638—Patents filed by Texas Co. in 1917-18:				
Manley 1,428,338			7	3382
Manley 1,428,339			7	3388
Manley 1,462,143			7	3410
Manley 1,640,202			7	3456

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1505; Vol. IV, pp. 1506 to 1992; Vol. V, pp. 1995 to 2482; Vol. VI, pp. 2485 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
741—Report, Backus to Universal on Dubbs run, lasting 126½ hours, at Ashland Refining Co.	2	842		
742—Report, Backus to Universal on Dubbs run, lasting 151 hours, at Ashland Refining Co.	2	842		
743—Letter, February 29, 1925, Backus to Bergman	2	842		
829—Certified copy of disclaimer and decision papers in Interference No. 49,355			4	1867
830—Holmes, Manley and Behimer patent 1,585,496			7	3428
Behimer Re-issue patent 16,877			7	3098
836—Drawing of Hall patent 1,175,910 (Brown's interpretation)	3	1383	4	1873
837—Drawing of Pielsticker patent 477,153 (Brown's interpretation)	3	1390	4	1875
838—Simplified drawing of Greenstreet patent 1,740,691 (Brown's interpretation)	3	1400	4	1877
839—Drawing of Alexander patent 1,407,619 (Brown's interpretation)	3	1404	4	1879
840—Enlarged drawing of Fig. 1 Biddison & Boyd patent 1,345,740 (See DX 801)	3	1409		
843—Drawing of Fig. 1 and Fig 2 of apparatus of Dubbs application 144,979	3	1417	4	1881

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1503; Vol. IV, pp. 1506 to 1992; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
844—Simplified drawing of five still apparatus in Dubbs application 144,979 (Brown's interpretation and calculations for gas oil)	3	1417	4	1883
845—Simplified drawing of Dubbs application 144,979 using two still apparatus (Brown's interpretation)	3	1429	4	1885
846—Simplified drawing (same as PX 844) (Brown's interpretation and calcualtions for crude oil)	3	1431	4	1887
847—Brown's chart on vaporization of 23.5° A. P. I. gas oil	3	1496	4	1889
848—Certified copy of File Wrapper of Dubbs application 144,979, filed Jan. 27, 1917	3	1466	4	1891
851—Brown's calculations of Dubbs operations for apparatus in Dubbs application No. 144,979			4	1967

DEFENDANT'S EXHIBITS.

163 a-m 164 173 a-k 174 a-q	(Abstract) List of patent infringement suits by Universal against users of Winkler-Koch stills, who contributed to defense fund		5	1995
175—Excerpts from Texas Company employee efficiency record for Behimer	1	183	5	1997
176—Excerpts from certified copy of File Wrapper of Behimer Appl. 263,562, Patent 2,027,014	1	183	5	2001

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1503; Vol. IV, pp. 1505 to 1993; Vol. V, pp. 1995 to 2492; Vol. VI, pp. 2495 to 3064; Vol. VII, pp. 3065 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
177—Excerpts from certified copy of File Wrapper of Behimer patent 1,883,850 (Appl. 630,242)	1	184	5	2008
178—Excerpts from certified copy of File Wrapper of Interference No. 49,355 entitled "Dubbs v. Holmes, Manley and Behimer"	1	184	5	2052
179—Excerpts from certified copy of File Wrapper of Interference No. 55,610	1	184	5	2118
180—Behimer's letter of Resignation to Texas Co., Aug. 24, 1927	1	185		
181—Letter, Holmes to Behimer, Aug. 27, 1927	1	186		
182—Letter Behimer to Holmes, Sept. 30, 1927 and check	1	188		
183—Letter, Dearborn to Behimer, Oct. 3, 1927	1	188		
184—Letter, Dearborn to Behimer, Oct. 17, 1927	1	190		
184A—Copy of Behimer's Contract with Texas Co., dated December 15, 1916	1	191		
185—Letter, C. M. Thomas to Dearborn, Oct. 22, 1927	1	192		
186—Letter, Dearborn to Thomas, Oct. Oct. 24, 1927	1	193		
187—Letter Behimer to Dearborn, Nov. 5, 1927	1	194		

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1502; Vol. IV, pp. 1503 to 1992; Vol. V, pp. 1995 to 2492; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
188—Letter, Thomas to Dearborn, Nov. 11, 1927	1	196		
189—Telegram, Dearborn to Thomas, 12, 1927	1	197		
190—Letter, Thomas to Dearborn, Nov. 16, 1927	1	197		
191—Letter, Dearborn to Behimer, Nov. 25, 1927	1	197		
192—Letter, Dearborn to Behimer, Dec. 14, 1927	1	198		
193—Letter, Dearborn to Thomas, Dec. 14, 1927	1	199		
194—Letter, Mace to Thomas, Dec. 22, 1927	1	199		
194A—Dearborn Affidavit attached to DX 194	1	200		
195—Letter, Thomas to Mace, Dec. 27, 1927	1	202		
196—Letter, Behimer to Dearborn, Mar. 27, 1928	1	203		
197—Proposed Amended Preliminary Statement of Otto Behimer, attached to DX 196	1	206		
202—Letter of Sept. 7, 1926, Beyt to Wannack. Check attached to letter	1 1	218 218	 5	 2163
203—G. D. White affidavit dated Aug. 31, 1926, with letter and envelope attached	1	219	5	2165
304—Affidavits of Dellinger, Behimer, White and Beyt	1	220		

Vol. I, pp. 1 to 580; Vol. II, pp. 581 to 1082; Vol. III, pp. 1083 to 1503; Vol. IV, pp. 1505 to 1993; Vol. V, pp. 1995 to 2482; Vol. VI, pp. 2495 to 3034; Vol. VII, pp. 3035 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
204A—Longhand letter, May 11, 1926 to "My dear Friend," unsigned	1	221		
204B—Typwritten letter, Apr. 22, 1926 to "My dear Friend," unsigned	1	221		
205—Excerpts from Texas Co. file on Behimer patent 1,883,850, consisting of copy of Behimer's assignment; letter Nov. 25, 1932 Mace to Cooper; letter, Dec. 1, 1932 Dearborn to Halle; letter, Dec. 22, 1932 Behrens to Dearborn	1	222		
206—Excerpts from Certified copy of Dubbs application Serial No. 266,396, of which the Dubbs application 6060 was a division and was involved in the Interference No. 55,610	1	229	5	2168
208—Excerpts from File No. 2, Inter-Company correspondence of the Texas Company, re Behimer			5	2223
209—Letter, Dec. 5, 1927, Stratford to Dearborn			5	2236
210 for ident.—Letter, Apr. 7, 1927, Stratford to Dearborn	1	244	5	2239
211—Letter, Sept. 10, 1926, Stratford to Dearborn	1	246		
212—Affidavit of G. H. Von Brunow, dated Mar. 11, 1926			5	2241
213—Letter, sent from Clark Hotel, Los Angeles, to "Dear Harry," unsigned, Oct. 23, 1926	1	256	5	2246

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
214—Letter, undated, sent from Rich Hotel, Houston, to "Dear Friend Harry," unsigned	1	256	5	2247
215—List of employees of The Texas Company given by Wannack to Brunow			5	2247
216—List of Texas Company refinery operators given by Kaufman to White			5	2249
217—Affidavit prepared for Maurice Beyt, unsigned	1	162	5	2250
218—Affidavit prepared for Maurice Beyt, unsigned	1	162		
219—Affidavit prepared for Maurice Beyt, unsigned	1	162	5	2255
220—Abstract of Bill of Complaint and Answer, and Amendment to Answer in Universal Oil Products Co. v. Dickey Refg. Co. (Equity No. 822-N)	1	229	5	2260
221—Letter, Nov. 30, 1926, Fantz to Olson	1	268		
222—Letter, Nov. 30, 1926, Fantz to Behimer	1	268		
223—Telegram, Dec. 7, 1925, Olsen to M. Egeler	1	269		
224—Telegram, July 17, 1927, C. P. Dubbs to Robert J. Dunham	1	269		
225—Telegram, July 17, 1927, C. P. Dubbs to Robert J. Dunham	1	270		

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
226—Telegram, July 18, 1927, R. J. Dunham to C. P. Dubbs	1	270		
227—Office Record Copy of Telegram, July 18, 1927, R. G. Danielson to L. H. Thompson	1	271		
228—Telegram, July 20, 1927, C. P. Dubbs to R. J. Dunham	1	271		
229—Telegram, July 21, 1927, Reichmann to C. P. Dubbs	1	272		
230—Telegram, July 22, 1927, A. F. Reichmann to C. P. Dubbs	1	272		
231—Photostat of contract between Universal Oil Products Company and Otto Behimer, dated Aug. 20, 1927	1	272		
232—Agreement between Otto Behimer and Universal Oil Products Co., dated Nov. 16, 1927	1	274		
233—Letter, Nov. 16, 1927, R. J. Dunham to Otto Behimer	1	279		
234—Wannack Expense memoranda (51 pages) for 1925 and 1926			5	2261
235—Wannack Expense item dated Aug. 7, 1925			5	2337
236A—Letter, July 3, 1925, Dubbs to Howard			5	2339
236B—Letter, July 7, 1925, Dubbs to Howard			5	2339
236C—Telegram, July 9, 1925, Dubbs to Howard			5	2340

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
237—Beyt's Contract with Universal Oil Products Co., dated Sept. 28, 1927			5	2341
238—Telegram, Oct. 1, 1927, Beyt to W. K. Holmes	1	364		
239—Apparatus for Reconstructed Experiment 8 operated Aug. 1926 (Page 92 of Behimer's affidavit)			5	2343
240—Apparatus for Experiment 8, operated May to Aug. 1917 (Page 43B of Behimer Affidavit)			5	2345
241 for ident.—Letter, Aug. 21, 1918, Dubbs to R. C. Holmes			5	2347
242-245—Abstract of Pleadings in suits of Universal v. Texas Company and Universal v. Standard Oil Company (Ind.) in 1926 and 1927	1	414	5	2355
246—Telegrams (15) from "Cal" to M. Egeler and telegram from C. Smith to Dubbs, Feb. to Sept. 1926	1	431	5	2356
247—Telegram, Aug. 3, 1925, Wannack to Egeler; Telegram, Nov. 17, 1925, Wannack to Egeler; Telegram, Jan. 18, 1926, "W" to Egeler; Letter, Aug. 3, 1926, Wannack to Egeler; Note, Oct. 16, 1926, "Cal" to "Dear Sir"			5	2360
248—Affidavit of C. P. Dubbs, Dec. 2, 1931	1	435		
249—Letters and telegrams between Dubbs and Wannack, June, 1925 to Nov. 1926			5	2361

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1002; Vol. III, pp. 1003 to 1502; Vol. IV, pp. 1505 to 1992; Vol. V, pp. 1995 to 2492; Vol. VI, pp. 2495 to 3004; Vol. VII, pp. 3005 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
307—Settlement agreement as of Apr. 1, 1939 (typewritten) between Universal and Root Petroleum Co.....			5	2376
308—Supplemental letter, Jan. 25, 1939, signed by Universal and Root Petroleum Co. modifying Paragraph 2 of DX 307.....			5	2381
311—Letter, Jan. 26, 1939, Root Petroleum Co. to Thiess.....			5	2383
525—Pyzel patent 1,597,821.....			7	3436
526—Jesse A. Dubbs patent 1,123,502..			7	3174
527—Trumble patent 1,281,884.....			7	3286
528—Pyzel patent 1,506,444.....			7	3424
529—Pyzel patent 1,891,218.....			7	3506
530—Pyzel patent 1,622,737.....			7	3444
554—Hanna patent 1,449,226.....			7	3394
555—Hanna patent 1,449,227.....			7	3402
556—Drawings of Richmond (Hanna) Pressure Still	2	568		
557—Drawing of Halloran and Strout Still, dated Aug. 30, 1923.....	2	570		
558—Drawing of Halloran and Strout Still, dated Jan. 22, 1924.....	2	570		
559—Flow sheet of proposed modified Richmond (Halloran and Strout) cracking process, dated March 18, 1924	2	578	5	2385
561—Hanna patent 1,655,603.....			7	3462

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
562—Standard Oil Co. drawing B-21601 (Dubbs furnace)	2	592		
563—Standard Oil Co. Drawing A-21589 (Dubbs furnace)	2	592		
564—Record sheets for Run No. 16, June 1926	2	592		
565—Record sheets for Run No. 41, Sept. 1926	2	593		
588—Defendant's request for admission of genuineness of documents			5	2387
589—Plaintiff's answer to request for admission of genuineness of documents			5	2392
590—Abstract of Booklet by U. O. P.—1924-25	2	625	5	2393
591—Abstract of Booklet by U. O. P.—1925-26	2	625	5	2395
592—Abstract of Booklet by U. O. P.—1923-24	2	625	5	2401
593—Huff Patent 1,638,735			7	3450
595—Huff Patent 1,937,959			7	3512
596—Huff Patent 2,039,797			7	3520
599—Patent application A (Homes, Manley & Behimer), delivered to Nesbitt by Mackenzie to be forwarded to Coit	3	1023	5	2403
600—Excerpt from letter, Mackenzie to Nesbitt, March 22, 1918	3	1023		
601—Telegram, Mackenzie to Holmes, March 23, 1918	3	1027		

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1503; Vol. IV, pp. 1505 to 1993; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
602—Excerpt from letter, Mackenzie to Holmes, Apr. 27, 1918	3	1027		
603—Excerpt from letter, Mackenzie to Nesbitt, May 3, 1918	3	1028		
604—Letter, Nesbitt to Foster, Freeman, Watson and Coit, May 4, 1918	3	1028	5	2414
605—Letter, Coit to Nesbitt, May 6, 1918	3	1028	5	2414
606—Letter, Mackenzie to Coit, May 9, 1918	3	1028		
607—Letter, Coit to Mackenzie, May 10, 1918	3	1028		
608—Letter, Mackenzie to Holmes, May 31, 1918	2	979		
	3	1028		
609—Excerpt from letter, Coit to Nesbitt, June 3, 1918	3	1029		
610—Excerpts from letter, Nesbitt to Coit, June 13, 1918 (Mackenzie's copy)	3	1029		
611—Letter, Coit to Nesbitt, June 15, 1918	3	1030		
612—Letter, Nesbit to Holmes, July 23, 1918, and attached copy of letter from Coit to Nesbitt, dated July 22, 1918	3	1031		
613—Letter, Mackenzie to Holmes, Aug. 27, 1918	3	1031		
614—Excerpts from letter, Mackenzie to Holmes, Sept. 9, 1918	3	1033		

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
615—Letter, Thomas to Mackenzie, Sept. 13, 1918, enclosing letter from Coit, dated Sept. 11, 1918.....	3	1033		
616—Letter, Mackenzie to Thomas, Sept. 24, 1918	3	1034		
617—Letter, Mackenzie to Holmes, Oct. 1, 1918	3	1034		
618—Letter, Mackenzie to Van Gundy, Oct. 22, 1918	3	1035		
619—Letter, Van Gundy to Mackenzie, Oct. 31, 1918	3	1035		
620—Letter, Behimer to Mackenzie, Oct. 31, 1918	2	915		
	3	1035		
621—Letter, Mackenzie to Holmes, Nov. 12, 1918	3	1036	5	2415
622—Letter, Mackenzie to Thomas, Nov. 18, 1918	3	1036		
623A—Flow diagram by De Florez, of operation at Bayonne (Hall Process)	2	847	5	2417
626—Excerpt from report, Mackenzie to Holmes, Feb. 28, 1917, Runs 12 to 2½ of Hall Process	2	853		
	3	1038		
627—Report, Mackenzie to Holmes, April 12, 1917, Runs 25, 26, 32 and 33	4	1044	5	2419
628—Excerpts from final report on Hall Process, May 9, 1917.....	3	1039	5	2422
629—Excerpt from report on Hall Process; Mackenzie to Holmes, May 7, 1917	3	1045		

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
630—Excerpt from report on Hall Process; Mackenzie to Manley, May 29, 1917	3	1040		
632—Excerpt from report, Mackenzie to Holmes, Oct. 17, 1917, Summary of Runs 101 to 109 on Hall Process	3	1040		
634—Report, Mackenzie to Holmes, Oct. 26, 1917, on Hall Process	3	1042	5	2436
635—Report, Mackenzie to Holmes, Jan. 17, 1918, Summary of October, November and December operations at Bayonne on Hall Process	3	1042	5	2444
641—Cady drawing of apparatus to demonstrate vapor pressure	2	792	5	2449
642—Cady curve of vapor pressure of water	2	793	5	2451
644—Cady photograph of column of boiling water	2	796	5	2453
645—Cady photograph of column after boiling has stopped	2	797	5	2453
646—Cady diagram of apparatus used to measure vapor pressure of mixed liquid solutions	2	797	5	2455
647—Cady diagram of apparatus showing the partial pressure effect in fractionation of a solution	2	802	5	2457
648—Excerpt from Science of Common Things, p. 194, by Wells (1863)	2	804	5	2459
649—Excerpt from Physics for College Student, p. 375, by Carhart (1910)	2	804	5	2459

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
650—Excerpt from A Text Book of Physics, p. 196, by Spinney (1925)..	2	804	5	2459
651—Excerpt from Physics, Advanced Course, by Barker, p. 309 (1892)....	2	805	5	2460
652—Excerpt from Elementary Treatise on Physics, p. 341, Atkinson's Translation of Ganot (1879)	2	805	5	2460
653—Excerpt from Essentials of Physics for College Students, p. 115, by Hering (1912)			5	2461
654—Excerpt from College Physics, p. 240, by Reed and Guthe (1912)...			5	2461
655—Excerpt from The Elements of Physics, p. 192, by Coleman (1906)..			5	2461
656—Excerpt from The Elements of Physics, p. 148, by Carhart & Chute (1894)			5	2461
657—Excerpts from Physics for Students of Applied Science, pp. 198 and 202, by Shrader (1937)			5	2462
658—Excerpt from A Textbook of Inorganic Chemistry for Colleges, p. 163, by Norris (1921)	2	805	5	2462
660—Behimer Patent 1,883,850.....			7	3494
662—Drawing X-1123 of Dewar & Redwood apparatus, dated Dec. 4, 1915	2	871	5	2463
663—Drawing Y-1568—Modified Redwood still, dated Sept. 19, 1916.....	2	872	5	2465
664—Behimer's sketch of modified continuous Dewar and Redwood still...	2	875	5	2467

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
665—Clark and Abbey line diagram of heating coil of Experiment 8, dated Aug. 17, 1916	2	882	5	2469
666—Drawing Y-1562, Smith Drawing of Coil, Experiment 8, dated Sept. 18, 1916	2	882	5	2473
667—Photostat of blue print from original tracing 1648 showing coil and drum Experiment 8, with marks by Behimer (See DX 754)	2	883	5	2475
667A—Enlargement of box title of DX 667, showing date of Nov. 6, 1916	2	883	5	2477
668—Photostats (front and rear) of blue print from tracing Y-1703, dated Dec. 7, 1916	2	885	5	2479
669—Photostat of tracing Y-1703 as revised, dated Jan. 29, 1917	2	885	5	2483
670—Letter, Mar. 23, 1917, Detwiler to Manley	2	1008		
671—Sketch #15 for jet pump No. 1 for Experiment 8	2	886	5	2485
672—Test data on jet pump, dated May 8, 1917	2	886	5	2487
673A—Earnest drawing No. 23 (page 1) of apparatus erected in coil and drum Experiment 8	2	887	5	2489
673B—Earnest drawing No. 23 (Page 2) of apparatus erected in coil and drum Experiment 8	2	887	5	2491
674—Group of textbook excerpts, re vaporization			5	2493

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
675—Behimer's fractioning equipment (Sketch #5)	2	892	6	2495
675A—Behimer's condenser for fractionators (Sketch #9)	2	892	6	2497
676—Records of Run 6, Experiment 8 (coil and drum)	2	896	6	2499
677—Records of Run 7, Experiment 8 (coil and drum)	2	900	6	2539
678—Records of Run 8, Experimental 8 (coil and drum)	2	900	6	2559
679—Records of Run 9, Experimental 8 (coil and drum)	2	900	6	2579
680—Behimer's distillation note book	2	902	6	2615
681—Behimer's permanent record book pages for Runs 6-9	2	902		
682—Behimer's index cards for Runs on Experiment 8	2	902		
683—Excerpt of letter, June 27, 1917, Manley to Detwiler	2	904		
684—Excerpt of letter, Aug. 14, 1917, Manley to Detwiler	2	908		
685—Behimer's sketch of proposed semi-commercial appartus	2	909	6	2639
686—Drawing Y-2200 of proposed semi-commercial apparatus, dated Sept. 24, 1917	2	909	6	2641
687—Letter, Nov. 5, 1917, Dawson to Bailey, with enclosed letter, Nov. 1, 1917, Collings to Dawson	2	911	6	2643

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
688—Excerpt from letter, Behimer to Bailey, Nov. 7, 1917	2	911		
689—Letter, Bailey to Behimer, Nov. 8, 1917	2	912	6	2644
690—Excerpt from letter, Manley to Bailey, Nov. 10, 1917	2	912		
691—Letter, Bailey to Dawson, Dec. 14, 1917	2	912	6	2645
692—Letter, Risdon to Bailey, Jan. 3, 1918	2	912	6	2646
693—Drawing Y-2282; incomplete Hartzler drawing of proposed coil and drum semi-commercial apparatus	2	912	6	2649
694—Donaldson's working copy of Behimer patent application (third draft)		914		
	2	999		
695—Tracing U-2310 for patent specification, dated Jan. 4, 1918	2	914	6	2651
696—Certified copy of Holmes, Manley & Behimer application No. 263,562, as filed			6	2653
697—Drawing P-169, dated Dec. 24, 1917, showing Batteries 2 and 3 of Experiment 18	2	915	6	2671
698—Drawing of heating coil of Battery 3, dated July 2, 1918	2	915		
699—Letter, Risdon to Capen, June 18, 1918	2	915	6	2673

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
700—Letter, Vilter Mfg. Co. to Texas Co., July 25, 1918	2	916		
701—Excerpt from letter, Behimer to Manley, Sept. 13, 1918	2	916		
703—Letter, Capen to Schutte-Koerting, Nov. 23, 1918	2	917	6	2675
704—Letter, Schutte-Koerting to Texas Co., Dec. 2, 1918	2	917	6	2675
705—Excerpts from Run sheets of Run 5; Battery 3, Experiment 18, dated Dec. 9-14, 1918	2	917	6	2677
706—Excerpts from report on Battery 2, Run 14 (with preheater coil), dated Dec. 14-23, 1918	2	919	6	2680
707—Excerpts from report on Run 7, Battery 3, Experiment 18, dated Jan. 11-13, 1919	2	919	6	2685
708—Excerpts from report on Run 8, Battery 3, Experiment 18, dated Feb. 25-27, 1919	2	919	6	2688
709—Drawing H-405—Alterations to batteries 1 and 2 (making a four-still battery), dated Dec. 4, 1918	2	920	6	2691
710A—Letter, Miller (Hancock Inspirator Co.) to Behimer, Mar. 29, 1919	2	920	6	2693
710B—Letter, Behimer to Hancock Inspirator Co., April 21, 1919	2	921	6	2697
710C—Letter, Berthold (Hancock) to Behimer, May 6, 1919	2	921	6	2698

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
710D—Excerpt from letter, Manley to Behimer, May 20, 1919.....	2	921		
711—Excerpts from Run 3, Battery 4, Experiment 18, April 26, 1919.....	2	921	6	2699
712—Letter, Behimer to Holmes, Dec. 6, 1919	2	924		
713—Letter, Holmes to Behimer, Dec. 31, 1919	2	924		
714—Drawing X-3595A of preheater and economizer of Experiment 11B, dated April 3, 1920.....	2	925		
715—Drawing Y-3619A—Apparatus of Experiment 11B, dated April 15, 1920			6	2705
716—Behimer's notations; re jets #6 and #7 for Experiment 11B, tested March 22, 1920.....	2	925		
717A—Letter, Behimer to Am. Steam Pump, Feb. 19, 1920.....	2	925		
717B—Letter, Am. Steam Pump to Texas Co., Feb. 25, 1920.....	2	925		
718A—Letter, Behimer to W. E. Quimby, Inc., Mar. 3, 1920.....	2	926		
718B—Letter, W. E. Quimby, Inc., to Texas Co., Mar. 13, 1920.....	2	926		
719A—Letter, Behimer to Ohio Injector Co., May 20, 1920.....	2	926		
719B—Letter, Ohio Injector Co. to Behimer, May 25, 1920.....	2	926		

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
720—Blueprint of tracing Y-4422 of centrifugal pump, dated Mar. 8, 1920	2	926		
721A—Drawing of Parish rotary pump, marked "89"	2	927		
721B—Drawing of plunger type pump, marked "90"	2	927		
722A—Letter, Bender to Behimer, Dec. 28, 1920	2	927		
722B—Letter, Behimer to Bender, Jan. 18, 1921	2	927		
723—Drawing Z-4346, showing horizontal, double acting, plunger type pump, dated Mar. 4, 1921	2	927	6	2707
724—Letter, Dow Pump Co. to Texas Co., Mar. 23, 1921	2	927	6	2709
725—Behimer notegram to Capen, April 9, 1921	2	928	6	2713
726—Notegram, Behimer to Elliott, April 8, 1921			6	2713
727—Notegram, Behimer to Dodge, May 3, 1921	2	928	6	2717
728—Drawing X-4644, Surge pump, dated May 28, 1921	2	928	6	2719
729—Flow diagram of original commercial batteries of the Texas Co., started March 1920	2	929	6	2721
730—Drawing Y-4630 dated May 21, 1921, showing Battery 14 with Surge pump	2	930	6	2723

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
731—Drawing Y-4871, showing modified Surge pump installation, dated Nov. 8, 1921	2	930	6	2725
732—Flow diagram of Run 63, Battery 14, using Surge pump return of reflux to the coil, Oct. 31, 1921 to Nov. 3, 1921	2	931	6	2727
733—Tracing record of tracing Y-1703	2	987	6	2729
734 for ident.—Behimer's statement to the Texas Co. in 1926	2	952	6	2731
735—Excerpt from letter, Alther to Backus, Oct. 23, 1924	2	837		
736—Excerpts from letter, Bergman to Huff, Mar. 19, 1925	2	838		
737—Excerpt from letter, Bergman to Huff, Apr. 13, 1925	2	839		
738—Distillation report of Dubbs residue	2	840		
739—Distillation report of Dubbs charging stock	2	840		
740—Distillation report of Dubbs residue from Unit #2	2	840		
745 for ident.—Excerpt from letter, Behimer to Dodge, Mar. 21, 1924	2	953		
746A-O—Photographs of Bayonne apparatus for Hall Process	2	850	6	2749
747—Log sheets of Run 24 at Bayonne (See Summary, DX 850)	2	853		

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
750—Excerpts from De Florez article (1923) in "The Refiner and National Gasoline Manufacturer" Magazine	2	857		
751—Excerpts from De Florez article in "National Petroleum News," Dec. 1927	2	859		
752—Tracing record of Drawing Y-1648	2	986	6	2779
753—Blueprint of tracing Y-1648 (Burton stills layout), dated Jan. 29, 1917	2	986		
754—Smith's recopy of original tracing 1648 (See DX-667)	2	986	6	2781
755—Donaldson's blueprint #11955 of tracing 1703-Y (See DX 668, 669)	2	999	6	2783
756—Letter, Donaldson to Holmes, Feb. 2, 1918, with attached application		971		
	2	1000	6	2785
757—Excerpt from letter, Donaldson to Holmes, Jan. 22, 1918		971		
	2	1001		
758—Letter, Holmes to Manley, May 17, 1916			6	2795
759—Letter, (enclosures omitted) Detwiled to Manley, June 20, 1917 (See PX 7)	2	903	6	2796
760—Thompson Patent 1,250,050			7	3254
761—Letter, Holmes to Manley, Jan. 30, 1918	2	971	6	2800
762—Telegram, Holmes to Manley, Feb. 6, 1918	2	972	6	2803

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
763—Letter, Manley to Holmes, Feb. 20, 1918	2	972		
764—Letter, Holmes to Lufkin, March 19, 1918	2	972		
765—Letter, Donaldson to Manley, Feb. 19, 1918	2	1002		
769—Detwiler memorandum, November 29, 1916, re secrecy	2	1006		
772}—Perspective drawing of Dubbs 773} patent 1,392,629	3	1072	6	2805
774-A}—Flow diagram of Defendant's 774} operation at Lemont, Ill., prepared by H. V. Smith	3	1115	6	2807
775—Photograph of Defendant's plant at Lemont, Ill.	3	1115	6	2809
776—Brown's vapor pressure chart in the Root case, with marks by H. V. Smith	3	1134	6	2811
777—Sketch of Jenkins still, prepared by H. V. Smith	3	1139	6	2813
778—Drawing of coil distillation apparatus, prepared by Reiman	3	1179	6	2815
779—Atwood Patent 28,448			7	3110
780—Simplified drawing of Atwood Patent, prepared by Reiman	3	1184	6	2817
781—Merrill Reissue patent 7,096			7	3105
782—Dewar and Redwood patent 419,931			7	3122
783—Burton patent 1,105,961			7	3164

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1503; Vol. IV, pp. 1504 to 1992; Vol. V, pp. 1993 to 2492; Vol. VI, pp. 2493 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
784—Humphreys patent 1,119,700			7	3170
785—Edwards patent 1,170,884			7	3182
786—Smith patent 1,239,423			7	3224
787—Benton (Br.) patent 1,922 of 1887			7	3527
788—Pielsticker (Br.) patent 6,466 of 1890			7	3545
789—Pielsticker (Br.) patent 1,706 of 1882			7	3539
790—Pielsticker (Br.) patent 1,308 of 1891			7	3531
791—Simplified drawing of Pielsticker patent, prepared by Reiman	3	1210	6	2819
792—Pielsticker patent 477,153			7	3126
793—Hall patent 1,175,910			7	3200
794—Letter, Kinzer to Dawson, Sept. 21, 1917	2	1015	6	2821
795—Letter, Dawson to Bailey, Sept. 24, 1917	2	1015	6	2821
796A—Letter, Kinzer to Dawson, Oct. 6, 1917	2	1016	6	2822
796B—Drawing U-2212, enclosed in 796A, of high pressure still drum, Experiment 12, dated Sept. 5, 1917	2	1016	6	2823
797—Drawing P-227, dated June 5, 1919, showing plan of a commercial battery without pump and clean circulation	2	1017	6	2825
798—Drawing P-230, dated June 2, 1919, showing longitudinal section of same stills	2	1017	6	2827

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1503; Vol. IV, pp. 1506 to 1993; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
799—Drawing P-238 showing preheater, dated June 5, 1919	2	1017	6	2829
800—Drawing Y-4578, dated May 21, 1921, showing piping for float gauge and Surge pump for back trap, Battery 14	2	1018	6	2831
801—Biddison & Boyd Patent 1,345,740			7	3336
802 and 802A—Excerpts from certified copy of File Wrapper of Biddison & Boyd Patent 1,345,740 and original drawings			6	2833
803—Simplified drawing of Biddison & Boyd patent prepared by Reiman	3	1231	6	2863
804—Ellis patent 1,396,999			7	3352
805—Simplified drawing of Trumble patent 1,281,884, prepared by Reiman	3	1250	6	2865
806—Alexander patent 1,407,619			7	3364
807—Excerpts from certified copy of Alexander patent File Wrapper			6	2867
808—Alexander patent, simplified drawing prepared by Reiman	3	1256	6	2897
809—Greenstreet patent 1,740,691			7	3476
810—Excerpts from certified copy of File Wrapper of Greenstreet patent 1,740,691	3	1283	6	2899
811—Enlarged drawing of Greenstreet patent with colored lines, prepared by Reiman	3	1265	6	2953
812—Simplified drawing of Greenstreet patent, prepared by Reiman	3	1270	6	2959

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
813—Prior Art Patents in File Wrapper of Dubbs, 1,392,629, except those shown as separate exhibits:				
Hall patent No. 1,175,909			7	3194
Zerning patent No. 1,183,266			7	3208
Lambert patent No. 1,245,930			7	3238
Ellis patent No. 1,249,278			7	3248
Coast patent No. 1,250,799			7	3262
814—Prior Art Patents in File Wrapper of Egloff, 1,537,593, except those shown as separate exhibits:				
Perkins patent No. 399,073			7	3116
Lang patent No. 954,575			7	3140
Gillons patent No. 1,084,080			7	3154
Forward patent No. 1,202,823			7	3218
Curran patent No. 1,255,714			7	3268
815—Dubbs patent 1,686,654			7	3468
816 for ident.—Excerpts from certified copy of File Wrapper of Dubbs patent 1,686,654	3	1345	6	2961
817—U. O. P. Bulletin B536, dated Jan. 15, 1926			6	2977
818A-O—Summaries of Run sheets for Dubbs cracking units			6	2978
819—Excerpts from U. O. P. Bulletin (1936) entitled "Cracking, Yesterday, Today and Tomorrow"			6	2993
820—Excerpts from U. O. P. Bulletin SR-508, June 20, 1932			6	2993
821—Excerpts from U. O. P. Bulletin SR-521, June 20, 1932			6	2994

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
822—Hall patent 1,285,136.....			7	3302
823—Hall patent 1,242,796.....			7	3230
824—Hall patent 1,194,289.....			7	3212
825—Excerpts from "Principles of Chemical Engineering" by Walker, Lewis and McAdams.....			6	2994
826A—Excerpts from certified copy of File Wrapper of Interference No. 52,305			6	2995
827A—Excerpts from the Warner-Quinlan Brief			6	2997
827B—Pielsticker drawing from the Warner-Quinlan Brief			6	3015
828—Excerpts from Interrogatories and Answer in C. P. Dubbs v. Universal Oil Products Co.....			6	3017
831—Mechling free hand sketch of normal Alexander operation.....	3	1353	6	3021
832—Mechling free hand sketch #1—"Regular Operation"	3	1355	6	3023
833—Mechling free hand sketch #2—"Return of part of condensate from Fractionating Tower with Fresh Feed"	3	1355	6	3025
834—Mechling free hand sketch #3—no title	3	1356	6	3027
835—Mechling free hand sketch #4—"Return of part of condensate from Exchanger Tower with Fresh Feed"	3	1356	6	3029

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1032; Vol. III, pp. 1033 to 1503; Vol. IV, pp. 1505 to 1993; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

	Described or Reproduced in Testimony Vol.	Page	Reproduced in Book of Exhibits Vol.	Page
849—Summary of demonstration Runs for Dubbs units, Avon, Calif., 1924-25			6	3031
850—Summary of Converter Logs of Run 24 at Bayonne (Hall Process), dated Jan. 22 to Feb. 5, 1917			6	3033
Motion by Defendant for re-admitting into evidence, DX-816, filed June 24, 1940				3033
Opinion on Merits, filed July 24, 1941				3035
Findings of Fact and Conclusions of Law, filed Oct. 14, 1941				3052
Judgment, entered Oct. 14, 1941				3061
Notice of Appeal, filed Nov. 7, 1941				3062
Statement of Points				3062
Bond on Appeal				3065
Stipulated Designation of Record				3066
Agreed Statement as to Exhibits				3070
Stipulation as to an Abstract of the Record, approved by Judge Evans				3083

UNITED STATES LETTERS PATENT.

No. 1,392,629—C. P. Dubbs, Oct. 4, 1921		3086
No. 1,537,593—G. Egloff, May 12, 1925		3094
No. 7096—Reissue—R. S. Merrill, May 2, 1876		3105
No. 16,877—Reissue—O. Behimer, Feb. 14, 1928		3098
No. 28,448—L. Atwood, May 29, 1860		3110
No. 399,073—G. H. Perkins, Mar. 5, 1889		3116

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1503; Vol. IV, pp. 1505 to 1993; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3034; Vol. VII, pp. 3035 to 3567.

No. 419,931—J. Dewar, et al., Jan. 21, 1890.....3122
No. 477,153—C. M. Pielsticker, June 14, 1892.....3126
No. 954,575—J. Shaug, Apr. 12, 1910.....3140
No. 1,049,667—W. M. Burton, Jan. 7, 1913.....3150
No. 1,084,080—G. H. Gillons, Jan. 13, 1914.....3154
No. 1,105,961—W. M. Burton, Aug. 4, 1914.....3164
No. 1,119,700—R. E. Humphreys, Dec. 1, 1914.....3170
No. 1,123,502—J. A. Dubbs, Jan. 5, 1915.....3174
No. 1,170,884—S. H. Edwards, Feb. 8, 1916.....3182
No. 1,175,909—W. A. Hall, Mar. 14, 1916.....3194
No. 1,175,910—W. A. Hall, Mar. 14, 1916.....3200
No. 1,183,266—H. Zerning, May 16, 1916.....3208
No. 1,194,289—W. A. Hall, Aug. 8, 1916.....3212
No. 1,202,823—C. Forward, Oct. 31, 1916.....3218
No. 1,239,423—A. D. Smith, Sept. 4, 1917.....3224
No. 1,242,796—W. A. Hall, Oct. 9, 1917.....3230
No. 1,245,930—C. G. Lambert, Nov. 6, 1917.....3238
No. 1,249,278—C. Ellis, Dec. 4, 1917.....3248
No. 1,250,050—N. W. Thompson, Dec. 11, 1917.....3254
No. 1,250,799—J. W. Coast, Jr., Dec. 18, 1917.....3262
No. 1,255,714—J. J. Curran, Feb. 5, 1918.....3268
No. 1,273,966—F. E. Wellman, July 30, 1918.....3278
No. 1,281,884—M. J. Trumble, Oct. 15, 1918.....3286
No. 1,285,136—W. A. Hall, Nov. 19, 1918.....3302
No. 1,288,711—L. O. Sherman, Dec. 24, 1918.....3306
No. 1,295,088—A. F. G. P. J. Von Groeling, Feb. 18, 1919 3318

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1503; Vol. IV, pp. 1505 to 1993; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3084; Vol. VII, pp. 3085 to 3567.

No. 1,324,983—R. R. Rosenbaum, Dec. 16, 1919.....3330
No. 1,345,740—P. McD. Biddison, et al., July 6, 1920..3336
No. 1,388,629—J. W. Coast, Jr., Aug. 23, 1921.....3344
No. 1,396,999—C. Ellis, Nov. 15, 1921.....3352
No. 1,407,619—C. M. Alexander, Feb. 21, 1922.....3364
No. 1,428,338—F. T. Manley, Sept. 5, 1922.....3382
No. 1,428,339—F. T. Manley, Sept. 5, 1922.....3388
No. 1,449,226—R. W. Hanna, et al., Mar. 20, 1923.....3394
No. 1,449,227—R. W. Hanna, et al., Mar. 20, 1923.....3402
No. 1,462,143—F. T. Manley, July 17, 1923.....3410
No. 1,488,325—C. P. Dubbs, Mar. 25, 1924.....3416
No. 1,506,444—D. Pyzel, Aug. 26, 1924.....3424
No. 1,585,496—R. C. Holmes, et al., May 18, 1926.....3428
No. 1,597,821—D. Pyzel, Aug. 31, 1926.....3436
No. 1,622,737—D. Pyzel, Mar. 29, 1927.....3444
No. 1,638,735—L. C. Huff, Aug. 9, 1927.....3450
No. 1,640,202—F. T. Manley, Aug. 23, 1927.....3456
No. 1,655,603—R. W. Hanna, Jan. 10, 1938.....3462
No. 1,686,654—C. P. Dubbs, Oct. 9, 1938.....3468
No. 1,740,691—C. J. Greenstreet, Dec. 24, 1929.....3476
No. 1,765,976—R. A. Halloran, et al., June 24, 1930...3486
No. 1,883,850—O. Behimer, Oct. 18, 1932.....3494
No. 1,891,218—D. Pyzel, Dec. 13, 1932.....3506
No. 1,937,959—L. C. Huff, Dec. 5, 1933.....3512
No. 2,039,797—L. C. Huff, May 5, 1936.....3520

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1502; Vol. IV, pp. 1505 to 1992; Vol. V, pp. 1995 to 2492; Vol. VI, pp. 2495 to 3094; Vol. VII, pp. 3095 to 3527.

BRITISH PATENTS.

No. 1706—Carl M. Pielsticker, 1882.....3539
No. 1922—George L. Benton, 1887.....3527
No. 6466—Carl M. Pielsticker, 1890.....3545
No. 1308—Carl M. Pielsticker, 1891.....3531
No. 6545—Hugh E. Fenchelle, 1914.....3551
No. 15,084—Milton J. Trumble, 1916.....3557
Order allowing certiorari 3587

Vol. I, pp. 1 to 550; Vol. II, pp. 551 to 1022; Vol. III, pp. 1023 to 1502; Vol. IV, pp. 1503 to 1993; Vol. V, pp. 1995 to 2493; Vol. VI, pp. 2495 to 3004; Vol. VII, pp. 3005 to 3587.

2853 [Abstract] of DX 163 (a-m), DX 164, DX 173 (a-k), DX 174 (a-q).

The following is a list of the patent infringement suits instituted against users of Winkler-Koch stills who contributed to the defense fund, showing the Court in which the case was filed, the date of the filing of the Bill of Complaint, and the number of patents involved:

Universal Oil Products Company *vs.* White Eagle Oil & Refining Co., Equity No. 717. (District of Del.) Filed March 11, 1929. 6 patents.

Universal Oil Prouct Company *vs.* Globe Oil & Refining Co., Equity No. 784. (District of Del.) Filed April 11, 1930. 8 patents.

Universal Oil Products Company *vs.* Skelly Oil Company, Equity No. 785. (District of Del.) Filed April 11, 1930. 6 patents.

Universal Oil Products Company *vs.* Globe Oil & Refining Co., Equity No. 892. (District of Del.) Filed July 7, 1931. 2 patents.

2854 Universal Oil Products Company *vs.* Skelly Oil Co., Equity No. 893. (District of Del.) Filed July 7, 1931. 4 patents.

Universal Oil Products Company *vs.* White Eagle Oil & Refining Co., Equity No. 894. (District of Del.) Filed July 7, 1931. 4 patents.

Universal Oil Products Company *vs.* Anderson Prichard Oil Company, Equity No. 1645. (Western District of Okla.) Filed August 23, 1934. 4 patents.

Universal Oil Products Company *vs.* Omar Refining Company, Equity No. 1779. (Western District of Okla.) Filed August 21, 1935. 2 patents.

Universal Oil Products Company *vs.* Rock Island Refining Company, Equity No. 4559. (Eastern District of Okla.) Filed August 23, 1934. 5 patents.

Universal Oil Products Company *vs.* Eldorado Refining Company, Equity No. 819-N. (District of Kans.) Filed July 23, 1934. 6 patents.

Universal Oil Products Company *vs.* Globe Oil & Refining Company, Equity No. 821-N. (District of Kans.) Filed July 24, 1935. 5 patents.

Universal Oil Products Company *vs.* National Refining Company, Equity No. 4018. (Northern District of Ohio.) Filed September 30, 1931. 10 patents. (Dismissed January 8, 1935.)

Universal Oil Products Company *vs.* National Refining Company, Equity No. 449-N. (District of Kans.) Filed April 1, 1935. 3 patents.

Universal Oil Products Company *vs.* National Refining Company, Equity No. 437-N. (District of Kans.) Filed March 25, 1937. 2 patents.

Gasoline Products Company, Inc. *vs.* Skelly Oil Company, Equity No. 557-N. (District of Kans.) Filed August 8, 1929. 3 patents.

Gasoline Products Company, Inc. *vs.* Globe Oil & Refining Company, Equity No. 1762. (Western District of Okla.) Filed July 19, 1935. 1 patent.

2855 Gasoline Products Company, Inc. *vs.* Champlin Refining Company, Equity No. 2581. (District of New Mexico.) Filed March 18, 1933. 3 patents.

Gasoline Products Company, Inc. *vs.* Globe Oil & Refining Company, Equity No. 1567. (Western District of Okla.) Filed December 26, 1933. 4 patents.

Gasoline Products Company, Inc. *vs.* National Refining Company, Equity No. 1398. (Northern District of Ohio.) Filed December 28, 1933. 3 patents.

Gasoline Products Company, Inc. *vs.* Skelly Oil Company, Equity No. 725-N. (District of Kans.) Filed October 22, 1932. 2 patents.

The Texas Company *vs.* Anderson Prichard Refining Corp., Equity No. 1485. (Western District of Okla.) Filed May 5, 1933. 2 patents.

The Texas Company *vs.* Chalmette Petroleum Corp., Equity No. 135. (Eastern District of La.) Filed April 6, 1933. 2 patents.

The Texas Company *vs.* The Republic Oil Refining Co., Equity No. 557. (Southern District of Texas.) Filed March 4, 1933. 6 patents.

The Texas Company *vs.* Garber Refining Company, Equity No. 1456. (Western District of Okla.) Filed March 6, 1933. 6 patents.

The Texas Company *vs.* Eldorado Refining Company, Equity No. 863-N. (District of Kans.) Filed June 29, 1935. 2 patents.

The Texas Company *vs.* Champlin Refining Company, Equity No. 1939. (Western District of Okla.) Filed March 1, 1937. 2 patents.

Standard Oil Company *vs.* Globe Oil & Refining Company, Equity No. 796-N. (District of Kan.) Filed December 30, 1933. 3 patents.

Standard Oil Company *vs.* Rock Island Refining Company, Equity No. 4462. (Eastern District of Okla.) Filed January 10, 1933. 3 patents.

Standard Oil Company *vs.* Globe Oil & Refining Company, Equity No. 10770. (Northern District of Ill.) Filed August 10, 1931. 2 patents.

Standard Oil Company *vs.* Globe Oil & Refining Company, Equity No. 12503. (Northern District of Ill.) Filed November 4, 1932. 1 patent.

2858 Employés Personal Efficiency Record

Date:
Entering Service
Change Occupation
Change Rate
Transfer

Leaving	Occupation	Location	Salary or Wages Rate	Per	Date Effective
10-25-15	Chemist	Pt. Arthur Works	100.00	Mo.	10-25-15
	Chemist	Pt. Arthur Works	125.00	Mo.	7- 1-16
	Chemist	Pt. Arthur Works	137.50	Mo.	7- 1-17
	Chemist	Pt. Arthur Works	187.50	Mo.	11- 1-17
	Chemist	Pt. Arthur Works	207.50	Mo.	1- 1-18
	Chemist	Pt. Arthur Works	250.00	Mo.	7- 1-18
	Chemist	Pt. Arthur Works	300.00	Mo.	1- 1-19
	Chemist	Pt. Arthur Works	325.00	Mo.	6- 1-19
	Chemist	Pt. Arthur Works	350.00	Mo.	1- 1-20
	Chemist	Pt. Arthur Works	400.00	Mo.	7- 1-20
1- 1-21	Chemist—Exp. Lab.	Pt. Arthur Works			
	Chemist—Exp. Lab.	Pt. Arthur Works	456.00	Mo.	2- 1-22
	Chemist—Exp. Lab.	Pt. Arthur Works	500.00	Mo.	1- 1-23
	Chemist—Exp. Lab.	Pt. Arthur Works	600.00	Mo.	1- 1-25
	Chemist—Exp. Lab.	Pt. Arthur Works	708.33	Mo.	1- 1-26
	Chemist—Exp. Lab.	Pt. Arthur Works	833.33	Mo.	1- 1-27

(In right-hand margin) File No. 28 Name Behimer, Otto Application No. PA-101.

2859 Employe's Progress Report

Instructions: Immediate Superior Will Check Thus: √ With Black Ink, in One of the Value Columns, the Degree of the Employe's Ability in Relation to Each Characteristic. Head of Department, Division, Works, or Terminal Will Express His Judgment by Checking Thus: √ With Red Ink, Where He Disagrees With First Rating.

Location P. A. W. K. J.
Department Refining
Date 8/31/26.
Name Otto Behimer.
Occupation Exp. Chemist H-MVS.
Application No.

Working Characteristics

	Check in One of These Columns				
	Excellent	Above Average	Average	Below Average	Poor
Vocational Ability—					
Knowledge		V			
Skill		V	V		
Accuracy		V	V		
Careful		V			
Systematic		V			
General Intelligence—					
Judgment		V	V		
Analytical Ability	V	V			
Teachableness	V	V			
Alertness	V	V			
Memory		V			
Character—					
Dependability	V	V			
Industry	V	V			
Co-operation		V			
Enthusiasm	V	V			
Patience		V			
Punctuality		V	V		
Leadership—					
Supervising Ability		V	V		
Initiative		V			
Tact		V	V		
Personality		V	V		

General Characteristics

	Check in One of These Columns		
	Pronounced	Active	Passive
Loyalty	V	V	
	Excellent	Good	Indifferent
Personal Appearnce		V	
	Good	Fair	Poor
Physical Fitness	V		
	Good	Fair	Poor
Health	V		

Name Physical Defects, If Any.....
Name Objection Personal Habits, If Any.....
Number of Working Days Since Last Report.....
Number of Days Worked.....
Percent of Days Worked to Total Working Days.....
Is Employe Married Yes. Number of Children.....

If Single, Is Employe Head of Family.....
Is Employe Improving in His Present Occupation Yes.
Is Employe Qualified for More Advanced Work.....
If So, What.....
What Other Work Can Employe Do, Give Details.....
Remarks .....
Employe's Present Home Address 2727 5th St.
Countersigned F. P. Dodge
Title

Signed T. G. Dellinger
Title 2nd Asst. Gen. Sutp.

2860 Note—The Object of These Reports Is to Insure an Equally Fair Consideration of Employes Based Upon Their Work and Other Qualifications.

Instructions

1—Please Check Carefully, Comparing Employes in Similar Occupations: For Example, Compare Salesman with Salesman, Clerk with Clerk, Mechanic with Mechanic, Laborer with Laborer, etc.

2—If from Lack of Opportunity You Have Been Unable to Form an Opinion as to Any Characteristic You Will Check Such with an "X" in the Average Column.

3—It Will Be Noted That Each of the Qualifications May Be Marked Under One of Five Gradings, the Outstanding One Being "Average". This "Average" Column Is Intended to Represent an Employe Whose Work and Qualifications Are Generally Satisfactory, and Is to Serve as a Basis in Grading.

Definitions

Vocational Ability—

Knowledge, as used, means understanding of the work.

Skill, as used, means the employe's ability to perform present work readily and well.

Accuracy, as used, means correctness. "Doing things correctly."

Carefulness, as used, means close attention to the performance of work assigned, thereby avoiding waste or destruction of property and injury to self and others.

Systematic, as used, means regularity of method and orderliness, not only in the performance of work, but in the manner of keeping desk, work bench, tools, etc.

Character—

Dependability, as used, applies to one who can be depended upon or relied upon.

Industry, as used, means earnest and steady application to work.

Co-operation, as used, means working together harmoniously. "Helping each other."

Enthusiasm, as used, means lively interest in one's work, and eagerness to instill a like interest in others.

Patience, as used, means that quality which prompts one to bear with difficulties and to stick to a task in the face of discouragement.

Punctuality, as used, means promptness, not only in attendance but also in the performance of duty.

General Intelligence—

Judgment, as used, means the ability to decide correctly. "Good sense."

Analytical Ability, as used, means the working out of the facts and details of the job or situation. "Going to the bottom of things."

Teachableness, as used, means both the desire and ability to learn.

Alertness, as used, means to think, and act quickly. "Quick to grasp."

Memory, as used, means the ability to retain and recall correctly knowledge and facts. "Not to forget."

Leadership—

Supervising Ability, as used, means ability to lead, direct and teach others.

Initiative, as used, means the ability and disposition to go ahead without waiting to be told.

Tact, as used, means the ability to impress others favorably, gain confidence, eliminate friction, and promote harmony.

Personality, as used, means that quality which characterizes a person by his or her deportment, bearing and appearance.

Loyalty, as used, means faithfulness to the company and its interests.

Personal Appearance, as used, means cleanliness of person, and neatness of dress.

Physical Fitness, as used, means the possession of necessary strength and endurance to perform the work assigned.

2891

DX 176.

390

DEPARTMENT OF COMMERCE.

United States Patent Office.

To all persons to whom these presents shall come, Greeting:

This Is To Certify that the annexed is a true copy from the records of this office of the File Wrapper, Contents and all Drawings, in the matter of the

Letters Patent of

Otto Behimer, assignor, by mesne assignments, to The Texas Company,

Number 2,027,014 Granted January 7, 1936,

for

Improvement in Processes for Making Gasoline.

Defts. Ex. 176.

2/23/38

B

2171

In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this third day of August, in the year of our Lord one thousand nine hundred and thirty-six and of the Independence of the United States of America the one hundred and sixty-first.

Conway P. Coe,

(Seal) *Commissioner of Patents.*

Attest:

D. E. Wilson,

Chief of Division.

11-8626

U. S. Government Printing Office.

3073 39½

Mail Room
Jun
10
1927

Paper No. 1
and Oath
Jun 11 1927
Division 31

U. S. Patent Office
D#16049
Int. #52543

17 Battery Place, New York
June 9, 1927

3075 **REMARKS.**

In view of the fact that it has been found that the subject-matter claimed in this application is the sole invention of one of the parties in lieu of the join... invention of all, the application has been amended accordingly, following the practice outlined by the Court of Appeals of the District of Columbia in the following decisions:

In re Roberts, 1920 C. D. 158.
Bijur v. *Kennington*, 1922 C. D. 54.
Briggs et al v. *Kaisling*, 1923 C. D. 186.

A sole petition and a sole oath by the inventor, Behimer, together with affidavits by the misjoined parties, Holmes and Manley, and the assent and ratification of the assignee, The Texas Company, are filed herewith.

It is respectfully requested that the Patent Office take the necessary steps to change the title of Interferences #49,654, 49,655 and 62,543, involving this application, to Cross *vs.* Dubbs *vs.* Behimer; Cross *vs.* Gomory *vs.* Behimer; Cross *vs.* Gomory *vs.* Dubbs *vs.* Behimer, respectively, in accordance with this amendment, and that the interferences proceed forthwith.

Respectfully submitted,

R. J. Dearborn,
Attorney for Applicant.

3090 #45

Mail Division
Dec 24 28

U. S. Patent Office
Docket Division
Dec 26 1928
U. S. Patent Office

17 Battery Place, New York
December 22, 1928

Otto Behimer
Serial No. 263,562
Filed Nov. 21, 1918
Process and Apparatus for Making Gasoline
Hon. Commissioner of Patents,
Washington, D. C.

Sir:

The Texas Company, assignee of the entire right, title and interest in and to the above identified application for Letters Patent of the United States, by reason of an assignment, duly recorded in the United States Patent Office, in Liber K-107, page 428 of the Assignment Records, hereby respectfully requests that in view of the present employment of the inventor, Otto Behimer, by the Universal Oil Products Company of Chicago, Ill., the said Otto Behimer and/or his attorney or attorneys shall be hereafter excluded from any access whatsoever to the files of the Patent Office relating to the prosecution of the above indicated patent application, so long as the same remains in pendency before the Patent Office. This request is made in accordance with the practice set down in the case of *in re The Kellogg Switchboard & Supply Company*, 123 O. G. 2310.

Respectfully submitted,
The Texas Company,
By N. S. S. Rodgers,
Vice-president.

Approved:
RJD

DEPARTMENT OF COMMERCE.

United States Patent Office.

Washington

May 3, 1933.

In re application
Otto Behimer
Serial No. 263,562
Filed Nov. 21, 1918
For: Process and Apparatus for Making Gasoline.

On Appeal
to the
Board of Appeals

EXAMINER'S STATEMENT.

3154 As already noted, certain of the claims of the group comprising claims 27, 28, 32, 33, 34, 37, 43, 45 and 46 (for example, claim 27) include the limitation that the stream of hyrdocarbon oil passes "once through" the heating coil. It is pointed out that the Board of Appeals considered this limitation and held that it did not patentably differentiate over Trumble; see page 4 of the Board's decision, page 170 of the record of interference 52,543. Moreover, the once through type of process in which oil is not recirculated from the vaporizing chamber to the heating coil it old in the art as shown by Pielsticker. Thus, Pielsticker heats oil under cracking conditions in coil D (fig. 1), separates vapors and unvaporized oil in L (fig. 4) and withdraws the latter through valve P without recirculating it through the coil D. Greenstreet 1,740,691 also discloses it to be old to pass oil "once through" coils 10 and 2 (fig. 4), separate out any non-volatile materials in chambers 22, and remove them through header 41 without recirculating them through the heating coils (See lines 93-96 page 1 of Greenstreet 1,740,691).

3155 Claims 14 and 24 correspond, prior to amendments of July 28, 1931; Oct. 28, 1932; and Feb. 27, 1933, to counts 1 and 2 of interference 52,543. In their original form, prior to said amendments, claims 14 and 24 were held by the Law Examiner and Board of Appeals to be un-

patentable over Trumble, along with the other claims in said interference. The effect of the above mentioned amendments is to add to claim 14 the limitation "and preventing the return of unvaporized oil which comprises a liquid residuum from the cracking drum to the heating coil"; and to claim 24 a similar limitation "while positively preventing any of the unvaporized oil remaining in the cracking drum from returning to the heating coil". Since the claims before amendment were held to be met by Trumble, and since the step which has been added to these claims in an effort to distinguish over Trumble is also old in the art, as shown in the Pielsticker and Greenstreet 1,740,691 patents above referred to, the examiner holds claims 14 and 24 to be unpatentable over Trumble, or over the issue of interference 52,543, in view of either Pielsticker or Greenstreet 1,740,691. While Trumble discloses returning to the heating coil a portion of the oil which is not vaporized in 2 and 3; the prevention of the return of unvaporized oil from a vaporizing chamber to a heating
3156 coil is taught by either Pielsticker or Greenstreet 1,740,691; and in view of the teaching of the latter patents it would not involve invention to modify the Trumble process so that unvaporized oil from 2 and 3 would not be returned to the heating coil. Moreover it is noted that the amendment to claim 14 does not actually differentiate from Trumble since in Trumble unvaporized oil "which comprises a liquid residuum" is removed from 3 through 44 and is prevented from returning to the heating coil.

3157 Claims 31, 39, 84, 90, 96, 99 include the limitation, already discussed in connection with claims 14 and 24, of preventing return of residual oil from the vaporizing drum to the heating zone; and for reasons noted under claims 14 and 24 these claims are considered unpatentable over Trumble or the issue of the several interferences in view of the teaching in Pielsticker or Greenstreet 1,740,691 of prevention of return of non-vaporized residual oil from the drum to the heating zone.

3161 The remaining appealed claim, 87, follows the form of the other appealed claims, but adds thereto the statement that gasoline and kerosene fractions are distilled, the kerosene fractions are condensed and returned to the drum commingled with the incoming supply. Claim 87 is rejected on Ellis, 1,415,232 in view of Trumble or the

issue of the several interferences. Attention is invited to the fact that the Ellis 1,415,232 patent is a division of a prior Ellis patent 1,396,999 and accordingly has an effective date of Oct. 14, 1913. In Ellis 1,415,232 oil is heated to a cracking temperature in coils 4, 4a etc., and discharged into chamber 8 wherein a cracking temperature is maintained. Vapors are fractionated in the column 10, and a condensed kerosene fraction is returned to the drum commingled with the incoming supply, see lines 45-52 page 1 of the reference. In Ellis 1,415,232 the oil is subjected to decomposition in the coils, 4, 4a etc., whereas claim 87 3162 specifies that the oil which is supplied to the drum shall be at a cracking temperature but "substantially free from decomposition". However, it is pointed out that in the several interferences this latter step was held to be met by Trumble, and it is accordingly held that in view of Trumble it would not involve invention to so operate the Ellis 1,415,232 process that the oil leaving the coils 4, 42 etc. was "substantially free from decomposition".

W. N. Holmes,
Examiner, Div. 31.

CSD.

3282 Serial No. 263,562

Address Only
The Commissioner of Patents
Washington, D. C.

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

December 11, 1935.

Otto Behimer Assors.

Your Application for a patent for an Improvement in Process For Making Gasoline

filed Nov. 21, 1918 has been examined and Allowed with 23 claims.

The final fee, Thirty Dollars, with $1 Additional For Each Claim Allowed In Excess of 20, must be paid not later than Six Months from the date of this present notice of allow-

ance. If the final fee be not paid within that period, the patent will be withheld, but the application may be renewed within one year after the date of the original notice with a renewal fee of $30 and $1 additional for each claim in excess of 20.

The office delivers patents upon the day of their date, on which date their term begins to run. The preparation of the patent for final signing and sealing will require about four weeks, and such work will not be begun until after payment of the necessary final fee.

When the final fee is paid, there should also be sent, Distinctly And Plainly Written, the name of the Inventor, Title Of The Invention, And Serial Number As Above Given, Date Of Allowance (which is the date of this circular), Date Of Filing, and, if assigned, the Names Of The Assignees.

If it is desired to have the patent issue to an Assignee Or Assignees, an assignment containing a Request to that effect, together with the Fee for recording the same, must be filed in this office on or before the date of payment of the final fee.

After issue of the patent, uncertified copies of the drawings and specifications may be purchased at the price of Ten Cents Each. The money should accompany the order. Postage stamps will not be received.

The final fee will Not be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

Notice.—When The Number Of Claims Allowed Is In Excess Of 20 No Sum Less Than $30 Plus $1 Additional For Each Claim In Excess Of Twenty Can Be Accepted As The Final Fee.

Respectfully,

Conway P. Coe,

Commissioner of Patents.

Donald H. Mace
Chrysler Bldg.
141 Broadway
New York, N. Y.

(In left-hand margin) —In Remitting The Final Fee Give The Serial Number At The Head Of This Notice.

(In right-hand margin) —Uncertified Checks Will Not Be Accepted.

3286 DX 177.
390

DEPARTMENT OF COMMERCE

United States Patent Office

To all persons to whom these presents shall come, Greeting:

This Is To Certify that the annexed is a true copy from the records of this office of the File Wrapper, Contents and Drawing, in the matter of the

Letters Patent of

Otto Behimer, Assignor, by Mesne Assignments, to The Texas Company,

Number 1,883,850, Granted October 18, 1932

for

Improvement in Processes for Making Gasoline.

Defts Ex 177
2/23/38
B

2171

In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this twenty-ninth day of March, in the year of our Lord one thousand nine hundred and thirty-three and of the Independence of the United States of America the one hundred and fifty-seventh.

Thomas E. Robertson,
Commissioner of Patents.

(Seal)

Attest:

D. E. Wilson,
Chief of Division.

11-8626

U. S. Government Printing Office: 1932.

3291 630242

$20.—Rec'd Apr Ck 6 1923

Apr 10 1923

C.C.U.S. Pat. Office
D#10049-B

PETITION.

~~To the Commissioner of Patents,~~

~~Your petitioners, Ralph C. Holmes, Frederick T. Manley, and Otto Behimer, citizens of the United States, and residents, respectively, of New York, in the County and State of New York; Houston, in the County of Harris, and State of Texas, and Port Arthur, in the County of Jefferson, and State of Texas; whose post office addresses are care of The Texas Company, 17 Battery Place, New York; Houston, Texas and Port Arthur, Texas, pray that Letters Patent may be granted to them for Improvements in Process For Making Gasoline, set forth in the annexed specification; and they hereby appoint R. J. Dearborn of No. 17 Battery Place, New York, N. Y., their attorney, with full power of substitution and revocation, to prosecute this application, to make alterations, and amendments therein, to sign the drawings, to receive the patent, and to transact all business in the Patent Office connected therewith.~~

~~Signed at Houston, Texas, this 21st day of March, 1923.~~
~~Revenue Stamp~~ ~~Ralph C. Holmes~~

~~Signed at Houston, Texas, this 21st day of March 1923.~~
~~Frederick T. Manley~~

Sub CJ ~~Signed at Tulsa, Okla. this 2 day of April 1923.~~
~~Otto Behimer~~

3292 ## SPECIFICATION.

~~To All Whom It May Concern:~~

pr c ~~Be it known that~~ *(I) †[~~We, Ralph C. Holmes,~~

" c ~~Frederick T. Manley, and~~] ~~Otto Behimer, citizen~~†[~~,~~] ~~of the~~

" c ~~United States and resident~~†[~~, respectively,~~] ~~of~~ †[~~New York,~~

---

* Matter in parentheses inserted.
† Matter in brackets precanceled.

" c ~~County and State of New York, Houston, County of Harris,~~
" c ~~and State of Texas, and~~] ~~Port Arthur, County of Jefferson~~
~~and State of Texas, have invented certain new and useful~~
~~Improvements In Process For Making Gasoline, of which~~
~~the following is a specification, reference being had~~
~~to the accompanying drawing forming a part thereof.~~

This invention relates to methods of making condensable light oils, such as gasoline. More particularly it relates to certain novel improvements in the cracking of hydrocarbons whereby higher boiling hydrocarbons are decomposed into those of lower boiling point.

" c This application is a division of *(MY) ~~our~~ copending application, Serial No. 263,562, filed November 21, 1918.

In prior methods of cracking hydrocarbon oils, considerable difficulty has been experienced on account of carbon formations, which occur on the sides of tubes and stills exposed to the heat required to carry on the
3293 cracking operation.

It is a broad novel feature of the herein-disclosed process that substantially all of the cracking operation occurs in a vessel to which no external heat is applied, except at such times and in such quantities as are necessary to compensate for heat losses, the oil prior to its introduction to such vessel having been

* Matter in parentheses inserted.

subjected to a high degree of cracking heat and the ex-
cess heat of the oil itself being used to effect its
pr e own decomposition. As a consequence, *(I) ~~we~~
avoid sub-
stantial carbon formations of the destructive char-
acter
which have proved such an impediment to prior
systems.
The removal of the cracking operation from the
heating
zone also reduces the danger from fires such as
fre-
quently occur where cracking is carried on in
highly
heated stills and coils exposed to direct heat.

" e More specially *(MY.) ~~our~~ process preferably
em-
bodies a novel cyclic system in which a circuit of
oil
is constantly maintained under varying liquid and
vapor
phases. The oil to be treated on entering this
circuit
is subjected to a high degree of heat, but the time
element is so controlled with respect thereto that
there
is comparatively little decomposition and deposi-
tion of
carbon while it is exposed to this external heat, the
oil
being rapidly removed from the heating zone and
conducted
to the cracking zone, where without necessary being
subjected to additional heat, ti undergoes a mole-
cular
decomposition whereby carbon and light products
are
formed and liberated. It will be understood that
oil
cracking or conversion is dependent not only upon
the

* Matter in parentheses inserted.

3294 relative conditions of pressure and temperature but also
upon the time element with respect thereto, that is,—
the necessary pressure and temperature must be maintained
for a sufficient period of time to enable the molecular
decomposition or conversion to take place. According
to the present invention, this time factor is so controlled,
by regulating the rate of heating the oil passing through
the heating zone that the temperature thereof is progressively raised in transit and reaches the desired
cracking temperature near the end of the heating coil
at about the time or a little before the oil emerges therefrom. Thus, although the oil is subjected to cracking
heats in the heating zone, this temperature is attained
only just previous to the exit of the oil therefrom, and
therefore, the oil leaves the heating coil before any substantial decomposition and incident deposition of carbon
takes place. Subsequently, the highly heated oil in a
state of incipient decomposition, is delivered to the cracking zone, where the desired temperature and pressure
conditions are continuously sustained and the cracking of
the oil and the incident decomposition of carbon are
effected. The bulk of the carbon is removed from the
circuit by withdrawing from the cracking zone, portions
of the residual oil. Although the process, in its

broad conception, is complete at this stage of the operation,
the light products preferably continue the cycle, leaving
the cracking zone in the form of vapor and gas. These
vapors and gases are then subjected to a reduction in
temperature, whereby the heavier constituents thereof, such
as kerosene, are condensed. The condensate preferably

—3—

3295 is combined with the charging oil entering the heating
zone, thus completing the cycle. The constituents
of the desired volatility are removed from the circuit
and condensed. The outlets from the circuit are so
controlled that the entire system is maintained under
a pressure sufficient to insure the desired molecular
transformation.

pr c ~~Our~~ *(MY) process is to be distinguished from those
of the prior art, in which a circuit of liquid residuum
is kept in circulation. When such oil is kept in circulation, considerable quantities of carbon are formed,
owing to the readiness with which this type of oil carbonizes when exposed to high temperatures, the carbon
forming in fine particles in the oil, and wherever it
comes in contact with heated metal surfaces, it attaches
itself thereto and builds up deposits, which often cause
the choking of tubes and coils. It also crystalizes
the metal surfaces, thereby decreasing the tensile
strength of the metal and causing the bulging and break-

* Matter in parentheses inserted.

ing of such surfaces. Any residual oil resulting from
the cracking operation will necessarily contain a considerable amount of heavy polymerization products and
carbon held in suspension in the oil, and to circulate
pr e such a residue through heated tubes is to cont*(I)~~ually~~
pass into or produce in such tubes a large amount of
" e free carbon. In ~~our~~ *(MY) system, ~~we~~ *(I) do not circulate a
residuum, but instead keep the residual oil removed from
the application of external heat and withdraw the heavier
portions thereof, which contain the bulk of the carbon,
from the cycle at the cracking zone, and continue the

~~4~~

3296 cycle by means of the vapor generated, which contains the
condensable product desired and also certain heavier
vaporous constituents which are used to complete the cycle.
pr e By removing the heavier residuum from the cycle, *(I) ~~we~~ keep
the circuit free from this source of carbon formation,
" e and since ~~we~~ *(I) conduct substantially all of the cracking
in a vessel to which either no external heat is applied
or only a small quantity of heat is applied to maintain
" e the requisite temperature conditions, *(I) ~~we are~~ *(AM) thus able
to effectively remove the carbon formed.

In cracking oil for gasoline, there is generally

* Matter in parentheses inserted.

formed a considerable quantity of vapors heavier than
gasoline, which may be generally designated by the term,
" c kerosene. ~~We~~ *(I) preferably employ these heavier vapors as
a carrier for the lighter vapors; they assist in maintaining a current of vapor by which the gasoline is removed from the cracking zone to a separator where the
kerosene vapors are condensed and removed from the gasoline
vapors which pass on to the condenser. The kerosene
condensate, preferably at a temperature, not materially
below its boiling point, is injected or otherwise suit-
pr D ably forced *(UNDER MECHANICAL PRESSURE) into the heavy oil charge entering the flowing
through the heating tubes whereby a foamy agitated mixture
is produced by the acceleration of the circulation in the
heating tubes resulting from the increased volume of oil
therein, thereby preventing the settling and flow of the
heavier portions of the oil along the bottom of the highly
heated tubes and the consequent local overheating and
carbonization of the oil, thus keeping the tubes substantially free from any slight carbon formations. These

—5—

3297 kerosene constituents are an excellent mechanical con-

* Matter in parentheses inserted.

ductor of heat, and there is thus produced a heat cycle
which materially assists in maintaining the proper temperatures
in the heating and cracking zones. By maintaining these
bodies in constant circulation, the kerosene constituents,
which under existing methods have been found so difficult
pr c to decompose into lighter products, are, in *(MY) ~~our~~ system,
ultimately reduced to gasoline.

" c *(I) ~~We~~ have devised certain novel apparatus which is
" c adopted for carrying out *(MY) ~~our~~ process, and illustrate the
preferred form thereof in the drawings in which,

Figure 1 is a diagrammatic elevation of said apparatus;

D Figure 2 is a *(DIAGRAMMATIC) ~~detail~~ view of a modified cracking
drum in which may be substituted for that of Figure 1.

It will be understood that other apparatus besides
D that illustrated may be used in carrying out *(MY) ~~our~~ process.

Referring to Fig. 1 of the illustrated drawings, a tubular heating coil 1 is located in a furnace 2, having
a burner 3 and a stack 4. As shown for illustrative purposes, the coil 1 comprises a plurality of horizontally
disposed rows of tubes extending through the furnace and
placed the one above the other. The adjacent ends of
each ~~alternate pair of~~ tubes in each horizontal row are
conveniently connected together by horizontally positioned

* Matter in parentheses inserted.

return bends or fittings to form horizontal coils. The
several horizontal coils thus arranged are conveniently
connected together at their right-hand ends by vertically
disposed return bends or fittings, as shown in Fig. 1, to
form a single elongated and continuous heating coil through

—6—

3298 which the oil flows and is heated to the required degree.
This coil is of extended length and restricted cross-section and has a relatively large and effective heating
surface whereby the stream of oil passing therethrough
is enabled to efficiently absorb heat and reach a high
temperature with rapidity. A checkered brick baffle
5 having openings 6 may serve to distribute the heat
evenly over the coil. A fresh oil charging line 7,
having a jet or injector 7^a, extends to a pump 8, which
is connected to a suitable source of oil supply (not
shown). The pipe 9, having a valve 10, extends from
the heating coil 1 to an enlarged cracking drum or chamber
11, within which it may terminate in a distributor 9^a.
The distributor 9^a may be of any suitable form to thoroughly distribute and diffuse the charging oil throughout the
body of oil in the drum whereby an intimate contact of
the highly heated charging oil with the body of oil in
the drum is effected. The cracking drum is preferably

provided with a jacket 11ª of suitable insulating material
to protect it against heat radiation and is equipped with
a valved draw-off 12, a vapor outlet 13, and an oil gauge
14. The vapor outlet 13 extends to a separator 15, having a vapor outlet 16, and a condensate outlet 17.
The vapor line 16 terminates in a water-cooled condenser
coil 18, having an outlet 19 equipped with a regulatable
pressure valve 20. If desired the valve 20 may be placed
pr c in the vapor line 16 but ~~we~~ *(I) prefer to maintain the pressure
in the heating coil, cracking drum and separator through
the condenser. The outlet 19 terminates in a collecting
tank 21, having a valved gas outlet 22 and a valved dis-

—7—

3299 tillate outlet 23. The condensate line 17, which is preferably insulated, as indicated at 17ᵇ is equipped with a valve 17ª and is connected to the charging line
7 at the jet 7ª.

In conducting the process with the apparatus illustrated, the oil to be treated is forced through the charging line 7 under considerable pressure, and
is rapidly flowed through the heating coil 1, where it
is heated to the desired cracking temperature. Preferably this temperature is somewhat higher than the temperature at which it is desired to conduct the cracking operation and may or may not result in substantial
vaporization. The oil on being forced through the coil

acquires a high cracking temperature, but on account of the rapidity of its flow, decomposition is only in the incipient stages when the oil is discharged through the pipe 9 into the heat insulated cracking drum 11 where a constant body of oil is maintained at a cracking temperature under pressure. The distributor 9*, if employed serves to discharge the oil into the cracking drum in a wide stream, thus thoroughly mixing the hot oil with the liquid body of oil maintained in the drum and diffusing the heat therethrough. This heat diffusion is materially aided by using a distributor with serrated edges. The rapid flow of the oil through the coil where it is closely confined is here suddenly retarded, as the oil enters the drum which is of ample volume. Thus the excess heat of the oil operates to maintain the body of oil at the desired cracking temperature and molecular decomposition and distillation are carried on vigorously, the higher boiling hydrocarbons continually breaking up into hydrocarbons of lower boiling point. The vapors and gas generated gather in

—8—

3300 the upper part of the cracking drum and pass out through the vapor outlet 13 to the separator 15, where there is effected a separation of hydrocarbons of desired volatility from those of less volatility. The hydrocarbons of the desired volatility pass out through the vapor line

16, by which they are conducted to the condenser 18,
where they are condensed, and the condensed distillate
is either intermittently or preferably continuously allowed to run into the collecting tank 21.

The temperature in the air condenser 15 is such that the less volatile hydrocarbons are condensed and
dropped into the conduit 17, by which they are conducted
while still hot to the jet in the charging line or
pr D other suitable *(FORCED OR APPLIED MECHANICAL PRESSURE) device for forcing the condensate into
the charging stream. The separator is preferably somewhat elevated so as to give a considerable head of
liquid in the pipe 17, which preferably contains a U bend, as illustrated, in order to form a liquid seal therein. This head of liquid, together with the high pressure at which the oil in the charging line passes the jet, this pressure being ordinarily from 50 to 100
pounds higher than the pressure in the drum, insures
that the condensate shall be constantly and positively
pr D drawn into the charging line and forced *(UNDER APPLIED MECHANICAL PRESSURE) into the coil
1. The introduction of this hot condensate into the charging line increases the volume of oil in the heating
coil and thereby accelerating the flow therein and producing a foamy mixture so that local overheating is
prevented and the coil is kept substantially free from
any slight carbon formations. This condensate con-

* Matter in parentheses inserted.

3301 sists in a type of hydrocarbons which when decomposed does not yield any great amount of carbon so that the oil charge is constantly being diluted with oil capable of being decomposed into lighter products without the production of large amounts of carbon. This condensate reaches the jet in a heated condition, preferably at a temperature not materially below its boiling point, so as to heat the charge of oil entering the heating coil. The heat cycle formed by the kerosene constituents contributes to the maintenance of the proper temperatures in the heating coil and the cracking drum. By in-
pr D jecting or otherwise suitably forcing this condensate *(UNDER APPLIED MECHANICAL PRESSURE)
pr c into the heating coil ~~we~~ *(I) increase the volume of oil flowing therein without increasing the total amount of oil charged into the system at any given time.

A considerable pressure is maintained throughout the system, which pressure is regulated by means of the valve 20 or the valve on the gas outlet 22. The pressure used varies with the character of the oil operated on and the character of the product desired. Ordinarily the decomposition in the cracking drum is carried on under a pressure of from 100 to 400 pounds. In utilizing oils of the type commonly employed for decomposition into products of the nature of gasoline a

* Matter in parentheses inserted.

temperature in the drum 11 of from 700° F. to 850° with a temperature in the coil 1 of from 700° F. to 950° F. is ordinarily used. For example, in cracking a paraffin base gas oil of a Baumé gravity of about 34°, a temperature of 850° F. in the coil and of 775° F. in the drum with a pressure of approximately 200 pounds has been used to advantage.

—10—

3302 The oil to be decomposed is constantly forced into the heating coil thereby causing a steady stream of heated oil to enter the cracking chamber. The residuum is withdrawn preferably at such a rate that there is maintained a constant body of oil in the cracking zone.

It is desirable to equip the apparatus with the valves 10 and 17ª so that in case there is a break in the heating coil the effect of any fire resulting may be localized by closing said valves, whereby the bulk of oil in the system will be retained in the cracking drum 11. It is understood that in the normal operation of the process these valves are open.

Auxiliary heat may be supplied to the cracking drum in any suitable manner if desired, and a convenient method of providing this auxiliary heat is, as shown in Fig. 2, to insulate only the upper part of the drum and apply heat at a moderate temperature or in a relatively pr e small quantity from any suitable heater such as is

D designated 30. *(THE LOWER PORTION OF THIS DRUM MAY BE ENCLOSED IN A FURNACE.) In the early stages of a run, since there is no danger of overheating a carbon-free surface, the drum may be heated freely until the necessary heat cycle has been generated and decomposition has begun. For this reason the arrangement of Fig. 2 possesses certain advantages over that of Fig. 1. But when decomposition begins, with a consequent deposition of carbon,

—11—

3303 the heat must be reduced, as otherwise the carbon would accumulate on the hot surfaces and build up tenacious formations thereon, thus preventing the effectual removal of the carbon and asphaltic bodies. As the run continues only a moderate heat is applied, sufficient only to offset the loss of heat due to radiation and distillation. If desired the drum may be heated by means of waste heat from the furnace 2 or in any other suitable manner.

The product obtained by the herein disclosed process is, for a cracked product, remarkably sweet, in other words, low in unsaturated compounds.

pr c It is understood that *(I) ~~we~~ use the terms gasoline and kerosene in this application by way of example and that these terms are taken as types of other similar dis-

" c tillates which may be produced by *(MY) ~~our~~ process. *(I) ~~We~~ use

*Matter in parentheses inserted.

the term gasoline as an example of the volatile product
desired which under the temperatures and pressures used
is a vapor in the separator 15 and is condensable in
pr e the cooling coil 18. *(I) ~~We~~ use the term kerosene as an
example of those constituents which under the temperatures
and pressures used is a vapor in the vapor line 13 but
is condensable in the separator 15. It is to be noted
that the gravity and boiling point of the products which
will condense in the separator 15 depends upon the tem-
perature therein under the pressures used.

Although for illustrative purposes the invention has been shown and described in connection with
apparatus of more or less specific details of construction,
arrangement and location of parts, and as embodying in its
mode of operation a certain series and sequence of somewhat

—12—

3304 definite steps and operating conditions, it will be understood that many of the objects and advantages of the invention may be obtained, to a great or less extent,
through the employment of apparatus of modified character
or, in fact, through variations or, in some cases, omissions,
of certain of the component steps, without departing from
the spirit and scope of the invention.

—13—

* Matter in parentheses inserted.

3305
pr e

What *(I) ~~We~~ Claim Is:

~~1. The process of converting hydrocarbon oil which comprises passing the oil through a heating coil whereby it is raised to a cracking temperature but is removed therefrom before any material decomposition sets in, passing said heated oil into a body of oil in a cracking zone under pressure and maintained at a cracking temperature by the continual entrance therein of the stream of oil from the heating coil, removing from the cracking zone residuum and vapors formed, separating the less volatile constituents of the latter and intermingling them with the stream of oil entering the heating coil and withdrawing from the circuit and condensing the lighter vapors formed.~~

~~2. In a system of converting hydrocarbons in which a body of oil is maintained under a pressure and temperature sufficient for cracking, the method of maintaining a kerosene heat cycle which comprises passing a stream of oil once through a heated zone to raise it to a cracking temperature, passing it at that temperature into a body of oil under pressure, maintaining in said body of oil substantially the cracking temperature imparted in said heated zone for a sufficient period of time to permit~~

*Matter in parentheses inserted.

material decomposition to take place, removing generated
vapors from said body of oil, separating the kerosene
therefrom, and mingling said kerosene with the stream of
charging oil passing through said heated zone.

5. The continuous method of converting hydrocarbons which comprises forcing hydrocarbon oil under
pressure into a heated coil and regulating the heating
therein so that it is raised to a cracking temperature, removing said oil from the coil before any material decomposition sets in and conducting it to a vessel maintained
Sub D[1] under pressure and not subjected to external heat where
3306 cracking is carried on by means of the heat contained in
the oil, removing from the cracking zone residuum and vapors
formed, separating the less volatile constituents of the
latter and forcing them into the oil entering the heating
coil.

4. The process of converting hydrocarbon oil which comprises continuously forcing said oil through a
heated coil at a rapid rate of flow, continuously removing
said oil from the coil before material cracking takes
place and introducing it into a body of oil while in its
heated condition to maintain said body of oil at a temperature
sufficient for decomposition without depending upon the
application of other external heat thereto, removing

~~*residuum and vapors formed, separating the heavier vapors from the others and continuously forcing them into the heating coil, while maintaining a pressure of substantially 100 to 500 pounds throughout the system.*~~

~~*5. The process of converting hydrocarbon oil which comprises passing said oil once through a heating coil where the oil acquires a high cracking temperature, continuously removing said oil from the coil and introducing it into a body of oil whereby said body of oil is maintained at a somewhat lower cracking temperature and is subjected to decomposition, removing from said body of oil residual bodies and vapors formed, separating out the heavier of said vapors and continuously forcing them into the heating coil, while maintaining a pressure of substantially 100 to 500 pounds throughout the system.*~~

See letter
Nov 6 '25

~~*6. The process of converting hydrocarbon oil which comprises forcing said oil through a coil and drum*~~

Per A ~~*while applying heat to said coil and drum and allowing the*~~

—2—

3307 ~~*vapors generated to develop pressure until decomposition of the hydrocarbon begins, then reducing the heat applied to the drum while securing it against substantial loss of heat through radiation and vaporization, and continuously*~~

~~supplying to the oil in the drum the necessary heat for decomposition by means of the stream of oil entering from the coil, the stream entering the coil being continuously commingled with a hot condensate separated out from the generated vapors.~~

~~*(6A)~~ †[7]. ~~A process of oil conversion that comprises maintaining a body of oil under pressure at a cracking temperature in a drum or chamber by continuously supplying oils at a comparatively high cracking temperature but substantially free from decomposition to the drum to be cracked therein, preventing loss of heat from said drum, distilling and condensing the gasoline and kerosene fractions*(,) separating the kerosene fractions and returning them to the drum commingled with the incoming supply.~~

pr c

~~*(7A)~~ †[8]. ~~A process of oil conversion that consists in maintaining a liquid body of oil under pressure at a cracking temperature in a drum, without applying external heat thereto, insulating the drum against loss of heat and supplying unconverted oil to the drum through a highly heated coil, the rate at which the oil is heated in the coil being regulated to avoid substantial decomposition of the oil therein, withdrawing residue from said drum, withdrawing~~

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~vapors from said drum, returning the heavier constituents~~
~~of said vapors to the coil and condensing the lighter con-~~
~~stituents of said vapors under pressure.~~
~~*(9A)~~ †[9]: ~~A process of oil conversion that comprises~~
Per D ~~forcing the oil at high speed through a coil into a cracking~~

—3—

3308 ~~drum or chamber, applying high temperature heat to the coil~~
~~to raise the temperature of the oil so that it is delivered~~
~~to the drum at a cracking temperature but without substantial~~
~~decomposition, maintaining a body of liquid oil under~~
~~pressure and at a cracking temperature in said drum to~~
~~produce decomposition thereof, continuously withdrawing~~
~~the vapors from the drum, separating the kerosene-like~~
~~constituents from the lighter vapors and reintroducing the~~
~~kerosene-like constituents into the coil with the charge,~~
~~and condensing the lighter vapors.~~
~~*(9A)~~ †[10]: ~~A process of oil conversion that comprises~~
~~forcibly introducing the oil into and passing it rapidly~~
~~in a single passage through a highly heated coil and into a~~
~~cracking chamber maintained under pressure to which no high~~
~~temperature heat is applied during the cracking operation,~~
~~withdrawing residue from said chamber, passing the vapors~~
~~from the chamber through a separator and returning the heavier~~

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~constituents of said vapors and forcing them with the fresh charging oil into the coil.~~

~~*(10A)~~ †[~~11~~]: ~~The continuous method of cracking hydrocarbon oils which comprises charging a stream of oil into a cracking still to maintain a body of oil therein, maintaining the oil therein under pressure and at a cracking temperature, removing the evolved vapors, separating out the heavier constituents thereof and cyclicly returning them to the still for further treatment by positively forcing them into the stream of charging oil being supplied to the still.~~

~~*(11A)~~ †[~~12~~]: ~~The process of oil conversion that comprises maintaining a body of oil in a still at a cracking temperature and pressure and under distillation, by continuously supplying oil thereto through a heating coil in which the oil is~~

—4—

3309 ~~raised to a comparatively high cracking temperature in a single passage, separating out the heavier distillation products in the form of a hot condensate and forcing it while still hot into the coil for retreatment.~~

~~*(12A)~~ †[~~13~~]. ~~A process of oil conversion that comprises passing the oil once through an extended heating zone of restricted cross-section and into a cracking and distilling zone where a body of liquid oil is maintained, decomposed~~

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~and distilled, separating the heavier constituents of the evolved vapors and returning them to the heating zone for retreatment, removing residue from the cracking zone without recirculating it through the heating zone, and maintaining superatmospheric pressure through the heating and cracking zones.~~

~~*(13A)~~ †[~~14~~]. ~~A process of oil conversion that comprises passing the oil through an extended heating zone of restricted cross-section where it is heated to a cracking temperature without substantial decomposition, delivering the heated oil into a cracking and distilling zone, separating the heavier constituents of the evolved vapors and returning them to the heating zone for retreatment, removing the residue from the cracking zone without recirculating it through the heating zone, and maintaining superatmospheric pressure through the heating and cracking zones.~~

~~*(14A)~~ †[~~15~~]. ~~A process of oil conversion that consists in passing the oil once through a heating coil and into a drum where a body of liquid oil is maintained and vapors evolved, separating the heavier constituents of the evolved vapors and returning them to the heating coil for retreatment, removing the residuum from the drum without recirculating it~~

---

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~through the coil, and maintaining superatmospheric pressure~~
~~through the coil and drum.~~

—5—

3310 *~~(154)~~ †~~[16]~~: ~~A process of coil conversion which comprises~~
~~heating the oil to a cracking temperature in a single passage~~
~~through a heating zone subjected to superatmospheric~~
~~pressure, delivering the highly heated oil into a body of~~
~~liquid oil in an enclosed chamber maintained at~~
~~superatmospheric pressure where the evolution of vapors is~~
~~effected, withdrawing the evolved vapors from said chamber,~~
~~separating out certain heavy constituents thereof and re-~~
~~turning them to the heating zone and chamber for further~~
~~conversion, condensing the lighter vapors of desired~~
~~volatility, and withdrawing the residue from the enclosed~~
~~chamber without returning it to heating zone.~~

*~~(164)~~ †~~[17]~~: ~~A process of oil conversion that comprises~~
~~forcing the oil at high speed once through a coil into a~~
~~cracking drum or chamber, applying high temperature heat to~~
~~the coil to raise the temperature of the oil so that it is~~
~~delivered to the drum at a cracking temperature, maintaining~~
~~a body of liquid oil therein under pressure and cracking~~
~~temperature to produce decomposition of the oil therein,~~
~~withdrawing the vapors from the drum, separating the heavier~~

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~constituents from the lighter vapors, returning the heavier constituents to the coil with the fresh charge to preheat the charge as it enters the coil, and condensing the lighter products.~~

~~*(17A)~~ †[~~18~~]: ~~A process of oil conversion which comprises converting the oil under cracking temperature and super-atmospheric pressure, condensing the heavier constituents of the evolved vapors, mixing the condensed constituents while in heated condition with the fresh charging oil, and heating and delivering the heated mixture free from residual oil to the cracking zone for conversion.~~

—6—

3311 ~~*(19A)~~ †[~~19~~] ~~A process of oil conversion which comprises preliminarily subjecting oil free from residual carbon to cracking heat sufficient to produce a condition of incipient conversion without substantial decomposition, delivering the highly heated oil to a cracking zone where a body of liquid oil is maintained under superatmospheric pressure and cracking temperatures whereby the oil is converted, and then separating out the heavier constituents of the evolved vapors and mixing them while in heated condition with the charging oil being heated, so that they also will be subjected to the preliminary heating.~~

---

* Matter in parentheses inserted.
† Matter in brackets precanceled.

*(19A) †[20]: A process of oil conversion that comprises forcing a stream of fresh oil through a charging line and thence into and through an elongated heating zone of restricted cross-section where the oil is raised in a single passage to a cracking temperature, delivering the highly heated oil into an enlarger drum where a body of liquid oil is maintained under pressure and at a cracking temperature, removing the evolved vapors from said drum, separating out the heavier constituents thereof and cyclicly returning them in heated condition to the charging line to commingle *(WITH) and preheat the charging stream of fresh oil.

pr c *(20A) †[21]. A process of oil conversion that comprises forcing a stream of oil under pressure once through an †[a] *(E)longated heating zone of restricted cross-section, applying heat to the oil in transit therethrough to raise the oil to a cracking temperature, delivering the heated oil into an enlarged zone where a body of liquid oil is maintained under pressure and at a cracking temperature, removing the evolved vapors from said enlarged zone, separating out the heavier constituents thereof in the form of a hot condensate and returning said condensate while still hot for retreatment by positively forcing it into the elongated heating zone against

—7—

* Matter in parentheses inserted.
† Matter in brackets precanceled.

3312 ~~the back pressure developed therein.~~

~~*(21A)~~ †[22]: ~~The process of oil conversion that comprises maintaining a body of oil under pressure in a cracking chamber where a cracking temperature is maintained, by continuously forcing a stream of charging oil therein through an elongated heating coil, wherein the oil is raised to a cracking temperature, the rate of heating the oil flowing through the heating coil being such as to avoid substantial deposition of carbon therein, separating out the heavier constituents of the evolved vapors and cyclicly returning them for retreatment by positively forcing them into the charging stream ahead of the heating coil and against the relatively high back pressure developed therein.~~

~~*(22A)~~ †[23]: ~~The process of oil conversion that comprises maintaining a body of oil in a chamber at a cracking temperature by continuously charging fresh oil therein at a rapid rate through an elongated charging line of restricted cross-section, maintaining a cracking pressure upon the oil in the chamber whereby a higher back pressure is developed in the elongated charging line by reason of the frictional resistance of the charging stream flowing therethrough, removing the evolved vapors from the cracking chamber, separating out the heavier constituents under substantially the pressure of the chamber~~

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~and cyclicly returning the separated condensate to the cracking chamber for retreatment by positively forcing it into the charging stream of fresh oil at a point in the charging line remote from the chamber and against the relatively high back pressure therein.~~

~~8~~

3313 ~~*(23.1)~~ †[~~24~~]: ~~A process of oil conversion that comprises forcing a stream of oil under pressure through an elongated heating coil wherein the oil is brought in a single passage to a cracking temperature, delivering the highly heated oil into an enlarged drum to maintain a body of oil under pressure therein, where the evolution of vapors takes place and carbon resulting from the cracking operation is deposited, drawing off carbon residue from said drum, separating the heavier constituents of the evolved vapors and returning them for retreatment in said coil and drum by positively forcing them into the stream of charging oil ahead of said coil.~~

~~*(24.1)~~ †[~~25~~]: ~~A process of converting relatively heavy into lighter hydrocarbons, consisting in passing a stream of oil through a zone where the oil is heated to a cracking temperature but without substantial vaporization, passed thence to and through a zone where vaporization takes~~

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~place, removing the vapors, subjecting them to reflux condensation, returning reflux condensate for further cracking, removing the residue, after said vaporization, from the system without permitting intermingling of any substantial portion thereof with the oil in the heating zone and maintaining a pressure upon the material during distillation.~~

~~*(25A)~~ †[~~26~~]. ~~A process of converting heavy into lighter hydrocarbons consisting in passing in an advancing direction a stream of oil through a zone where the oil is heated to the cracking temperature but substantial vaporization prevented and thence to and through a zone where vaporization takes place, removing the vapors and condensing them, returning a portion of the condensates to the heating zone for further treatment, removing the residue after said~~

—9—

3314 ~~vaporization from the system without permitting contact or intermingling of any substantial portion thereof with the oil in the heating zone and maintaining a vapor pressure upon the material under treatment during distillation and condensation.~~

~~*(26A)~~ †[~~27~~]. ~~A process of converting heavy into lighter hydrocarbons consisting in passing in an advancing direction~~

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~a stream of oil through a heating zone where the oil is~~
~~heated to the cracking temperature but substantial vapor-~~
~~ization prevented and thence to an enlarged chamber where~~
~~vaporization takes place, removing the vapors from said~~
~~chamber and condensing them and returning a portion of the~~
~~condensates to the heating zone for further treatment, with-~~
~~drawing substantially continuously the residue from said~~
~~chamber and discharging the same entirely apart from the~~
~~feed of oil to the heating zone and maintaining a vapor~~
~~pressure upon the material under treatment during dis-~~
~~tillation and condensation.~~

*~~(27,1)~~ †[~~28~~]: ~~A process of converting heavy into lighter~~
~~hydrocarbons consisting in passing in an advancing direction~~
~~a continuous stream of oil through a heating zone where~~
~~the oil is heated to the cracking temperature but sub-~~
~~stantial vaporization prevented and thence to a chamber~~
~~where vaporization takes place, discharging from the~~
~~chamber substantially continuously a quantity of the residue~~
~~proportional to the amount of oil supplied to the heating~~
~~zone and said vaporization, condensing the vapors and~~
~~returning a portion of the condensates to the stream of oil~~
~~for re-treatment in the heating zone and maintaining a~~

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~vapor pressure upon the material under treatment during distillation and condensation.~~

—10—

3315 *~~(29A)~~ †~~[29]~~: ~~A continuous process for cracking hydrocarbons consisting in passing the same in a stream in an advancing direction from an inlet point to a discharge point separated and entirely dissociated from the inlet point, subjecting the material in the first stage of its travel to a cracking temperature while preventing substantial vaporization, affording a vaporization space above the stream during the second stage of the travel thereof to said discharge point, taking off the vapors from said vapor space and subjecting them to a condensing action, discharging into the stream at a point remote from that where vaporization occurs a portion of the condensates and maintaining vapor pressure on the material under treatment during distillation and condensation.~~

*~~(29A)~~ †~~[29]~~: ~~A process of cracking oil consisting in continuously passing a stream of oil through a series of tubes seated in a cracking zone where the oil is heated to the cracking temperature but substantial vaporization prevented, and thence to an enlarged vapor chamber where vaporization takes place, removing the vapors from said~~

* Matter in parentheses inserted.
† Matter in brackets preceded.

~~chamber, subjecting them to an initial condenser where a~~
~~portion of the vapors are condensed, subjecting the un-~~
~~condensed portion of the vapors to a final condensation,~~
~~returning the condensate from said initial condensation~~
~~to the inlet side of the cracking tubes and continuously~~
~~drawing off the residue from the vapor chamber and pre-~~
~~venting it from returning to the cracking zone and main-~~
~~taining a pressure on the oil during treatment.~~

~~*(20A)~~ †[~~21~~]. ~~A process of cracking oil consisting in~~
~~progressively passing the oil through a heating zone where~~
~~the oil is heated to the cracking temperature but substan-~~

—11—

3316 ~~tial vaporization prevented and then passing the heated~~
~~oil through a vaporizing zone, forcing the carbon con-~~
~~taining residue out of the system and preventing it from~~
pr c ~~coming in contact with the incoming charging stock*(,) taking~~
~~off vapors from the vapor zone and condensing them and~~
~~returning condensate therefrom to and mixing it with the~~
~~fresh charging stock which is being passed through said~~
~~zone.~~

~~*(21A)~~ †[~~22~~]. ~~The process for treating hydrocarbon oil by~~
~~heating it to a cracking temperature and condensing the~~
~~condensable products volatilized therefrom under pressure.~~

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~consisting in raising the oil to a cracking temperature~~
~~without substantial vaporization in a heating zone, passing~~
~~the heated oil to a second zone where vaporization occurs,~~
~~removing the vapors and subjecting them to condensation,~~
~~subjecting a portion of the condensate to further cracking,~~
~~taking off the carbon containing residuum from the second~~
~~zone without permitting access of any substantial portion~~
~~thereof to the heating zone and maintaining a pressure~~
~~upon the materials under treatment, substantially as described.~~

Add ~~B1~~ D1>

—12—

3317 ~~In witness whereof I have hereunto set my hand and seal this 31st day of March 1923.~~

~~Ralph C. Holmes~~

~~In witness whereof I have hereunto set my hand and seal this 31st day of March 1923.~~

~~Frederick T. Manley~~

Per C

In witness whereof I have hereunto set my hand and seal this 2 day of April 1923.

Otto Behimer.

3318 ~~*OATH.*~~

For substitute oath see paper #11 C3.

~~*State of Texas*~~
~~*County of Harris*~~ } ~~ss.~~

~~*Ralph C. Holmes, one of the above named petitioners, being sworn deposes and says that he is a citizen of the United States and a resident of New York, in the County and State of New York, that he verily believes himself to be the original, first and joint inventor of the Improvement in Process for Making Gasoline described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before their joint invention or discovery thereof, or patented or described in any printed publication in any country before their invention or discovery thereof or more than two years prior to their application, Serial No. 263,562, filed November 21, 1918, of which the present application is a division, or in public use or on sale in the United States for more than two years prior to the filing of the parent application; that said invention has not been patented in any country foreign to the United States on an application filed by them or their legal representatives or assigns more than twelve months prior to their parent application and that no application for patent on said improvement has been filed by them or their representatives or assigns in any country foreign to the United States except as follows:~~

3319	Japan	Filed Feb.	27, 1922
	Canada	" Dec.	3, 1921
	Gt. Britain	" Jan.	12, 1922
	Holland	" "	14, 1922
	Belgium	" Feb.	7, 1922
	France	" Jan.	31, 1922
	Mexico	" Feb.	16, 1922
	Brazil	" "	6, 1922
	Hungary	" Jan.	25, 1922
	India	" "	31, 1922
	Roumania	" Feb.	17, 1922
	Australia	" "	2, 1922
	Cuba	" Jan.	9, 1922
	New Zealand	" Feb.	24, 1922
	U. of So. Africa	" "	2, 1922

Chile	"	"	8, 1922
Argentine	"	Jan.	26, 1922
Italy	"	Feb.	6, 1922
Czecho-Slovakia	"	Jan.	25, 1922
Germany	"	"	17, 1922
Austria	"	"	25, 1922
Guatemala	"	"	24, 1922
Nicaragua	"	Feb.	15, 1922
Salvador	"	Jan.	31, 1922
Spain	"	"	10, 1922
Costa Rica	"	Mar.	25, 1922
Panama	"	Jan.	20, 1922
Bolivia	"	Mar.	4, 1922
Mexico (divisional)	"	Apr.	5, 1922
Ecuador	"	"	27, 1922
Poland	"	"	27, 1922

Ralph C. Holmes.

Sworn to and subscribed before me John Moore this 31st day of March 1923.

John Moore,

(Seal) *Notary Public, Harris County, Texas.*

3320 ~~*OATH.*~~

~~*State of Texas*~~
~~*County of Harris*~~ } ~~*ss.*~~

~~*Frederick T. Manley, one of the above named petitioners, being sworn deposes and says that he is a citizen of the United States and a resident of Houston, in the County of Harris, and State of Texas, that he verily believes himself to be the original, first and joint inventor of the Improvement in Process for Making Gasoline described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before their joint invention or discovery thereof, or patented or described in any printed publication in any country before their invention or discovery thereof or more than two years prior to their application. Serial No. 262,562, filed November 21, 1918, of which the present application is a division, or in public use or on sale in the United States for more than two years prior to the filing of the parent application; that said invention has not been patented in any country foreign to the United States on an application*~~

~~*filed by them or their legal representatives or assigns more than twelve months prior to their patent application and that no application for patent on said improvement has been filed by them or their representatives or assigns in any country foreign to the United States except as follows:*~~

For sub. oath see paper #11 C4.

3321	Japan	Filed	Feb.	27, 1922
	Canada	"	Dec.	3, 1921
	Gt. Britain	"	Jan.	12, 1922
	Holland	"	"	14, 1922
	Belgium	"	Feb.	7, 1922
	France	"	Jan.	31, 1922
	Mexico	"	Feb.	16, 1922
	Brazil	"	"	6, 1922
	Hungary	"	Jan.	25, 1922
	India	"	"	31, 1922
	Roumania	"	Feb.	17, 1922
	Australia	"	"	2, 1922
	Cuba	"	Jan.	9, 1922
	New Zealand	"	Feb.	24, 1922
	U. of So. Africa	"	"	2, 1922
	Chile	"	"	8, 1922
	Argentine	"	Jan.	26, 1922
	Italy	"	Feb.	6, 1922
	Czecho-Slovakia	"	Jan.	25, 1922
	Germany	"	"	17, 1922
	Austria	"	"	25, 1922
	Guatemala	"	"	24, 1922
	Nicaragua	"	Feb.	15, 1922
	Salvador	"	Jan.	31, 1922
	Spain	"	"	10, 1922
	Costa Rica	"	Mar.	25, 1922
	Panama	"	Jan.	20, 1922
	Bolivia	"	Mar.	4, 1922
	Mexico (div.)	"	Apr.	5, 1922
	Ecuador	"	Feb.	18, 1922
	Poland	"	"	27, 1922

Frederick T. Manley.

Sworn to and subscribed before me John Moore this 31st day of March 1923.

John Moore,

(Seal) *Notary Public, Harris County, Texas.*

3322 ~~*OATH.*~~

~~*State of Oklahoma*~~ }
~~*County of Tulsa*~~ } ~~*ss.*~~

~~*Otto Behimer, one of the above named petitioners, being sworn deposes and says that he is a citizen of the United States and a resident of Port Arthur, in the County of Jefferson, and State of Texas, that he verily believes himself to be the original, first and joint inventor of the Improvement in Process for Making Gasoline described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before their joint invention or discovery thereof, or patented or described in any printed publication in any country before their invention or discovery thereof or more than two years prior to their application, Serial No. 262,562, filed November 21, 1918, of which the present application is a division, or in public use or on sale in the United States for more than two years prior to the filing of the parent application, that said invention has not been patented in any country foreign to the United States on an application filed by them or their legal representatives or assigns more than twelve months prior to their parent application and that no application for patent on said improvement has been filed by them or their representatives or assigns in any country foreign to the United States except as follows:~~

For sub oath see paper 11 C5 & C2.

3323	Japan	Filed Feb. 27, 1922
	Canada	" Dec. 3, 1921
	Gt. Britain	" Jan. 12, 1922
	Holland	" " 14, 1922
	Belgium	" Feb. 7, 1922
	France	" Jan. 31, 1922
	Mexico	" Feb. 16, 1922
	Brazil	" " 6, 1922
	Hungary	" Jan. 25, 1922
	India	" " 31, 1922
	Roumania	" Feb. 17, 1922
	Australia	" " 2, 1922
	Cuba	" Jan. 9, 1922
	New Zealand	" Feb. 24, 1922

U. of So. Africa	"	" 2, 1922
Chile	"	" 8, 1922
Argentine	"	Jan. 26, 1922
Italy	"	Feb. 6, 1922
Czecho-Slovakia	"	Jan. 25, 1922
Germany	"	" 17, 1922
Austria	"	" 25, 1922
Guatemala	"	" 24, 1922
Nicaragua	"	Feb. 15, 1922
Salvador	"	Jan. 31, 1922
Spain	"	" 10, 1922
Costa Rica	"	Mar. 25, 1922
Panama	"	Jan. 20, 1922
Bolivia	"	Mar. 4, 1922
Mexico (Div.)	"	Apr. 5, 1922
Ecuador	"	Feb. 18, 1922
Poland	"	" 27, 1922

Otto Behimer.

Sworn to and subscribed before me this 2nd day of April, 1923.

H. G. Horning,
Notary Public.

(Seal)

My Commission Expires Sept. 22, 1923.
For sub. oath see paper #11.

3324 2

Mail Room
Apr
11
1923
U. S. Patent Office
D#10049-B

Apr 12 1923
Letter

17 Battery Place, New York, N. Y.,
April 10th, 1923.

Div. 31,
Ser. No. 630,242
Holmes, et al.
Filed April 6, 1923
Process for Making Gasoline
Hon. Comr. of Patents,
Washington, D. C.

Sir,

In the matter of the above entitled application, the following remarks are respectfully submitted:

REMARKS

This application is a division of a co-pending parent application, Serial No. 263,562, filed November 21, 1918, and the claims thereof respectively correspond to claims 2, 4, 6, 7, 9, 10, 13, 19, 20, 21, 25, 36, 40, 41, 42, 43, 46, 47, 49, 59, 60, 61, 62, 63, 69, 70, 71, 72, 73, 74, 75 and 76, of the parent case. Certain of these claims, (namely, 69, 70, 71, 72, 73, 74, 75 and 76) herein numbered 25, 26, 27, 28, 29, 30, 31 and 32, were copied at the request of the Patent Office from the patent to Dubbs 1,392,629 for purposes of interference. It is, therefore, respectfully requested that the interference be declared.

Respectfully,
R. J. Dearborn,
Attorney for Applicants.

3346 Mail Room
Jun
10
1927
U. S. Patent Office

Paper No. 11
C
Jun 11 1927
Division 31

17 Battery Place, New York
June 9, 1927

Serial No. 630,242
Holmes et al
Filed April 6, 1923
Improvements in Process for Making Gasoline
Hon. Commissioner of Patents
Washington, D. C.

3347 REMARKS.

In view of the fact that it has been found that the subject-matter claimed in this application is the sole invention of one of the parties in lieu of the joint invention of all, the application has been amended accordingly, following the practice outlined by the Court of Appeals of the District of Columbia in the following decisions:

3348 *In re Roberts*, 1920 C. D. 158.
Bijur v. *Kennington*, 1922 C. D. 54.
Briggs et al. v. *Kaisling*, 1923 C. D. 186.

A sole petition and a sole oath by the inventor, Behimer, together with affidavits by the misjoined parties, Holmes, and Manley, and the assent and ratification of the assignee, The Texas Company, are filed herewith.

It is respectfully requested that the Patent Office take the necessary steps to change the title of Interference #49,355, involving this application, to Dubbs *vs.* Behimer, in accordance with this amendment, and that the interference proceed forthwith.

Respectfully submitted,
R. J. Dearborn,
Attorney for Applicant.

3358 Mail Division #13

Dec 24 28
U. S. Patent Office
Docket Division
Dec 26 1928
U. S. Patent Office

17 Battery Place, New York
December 22, 1928

Otto Behimer
Serial No. 630,242
Filed April 6, 1923
Improvements in Process for Making Gasoline
Hon. Commissioner of Patents
Washington, D. C.

Sir:

The Texas Company, assignee of the entire right, title and interest in and to the above identified application for Letters Patent of the United States, by reason of an assignment, duly recorded in the United States Patent Office, in Liber A-119, page 68 of the Assignment Records, hereby respectfully requests that in view of the present employment of the inventor, Otto Behimer, by the Universal Oil Products Company of Chicago, Ill., the said Otto Behimer and/or his attorney or attorneys shall be hereafter excluded from any access whatsoever to the files of the Patent Office relating to the prosecution of the above indicated patent application, so long as the same remains in pendency before the Patent Office. This request is made in accordance with the practice set down in the case of *In re The Kellogg Switchboard & Supply Company*, 123 O. G. 2310.

Respectfully submitted,
The Texas Company,
By F. S. S. Rodgers,
Vice-President.

Approved
RJD

3362 Div. 31 Room 312 CSD-VA Paper No. 17

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

Mailed
Jan 9 1932

Please find below a communication from the Examiner in charge of this application.

Thomas E. Robertson,
Commissioner of Patents.

Applicant: Otto Behimer
Ser. No. 630,242
Filed Apr. 6, 1923
For Process for Making Gasoline

Donald H. Mace,
405 Lexington Avenue,
New York, New York.

Responsive to letter of Dec. 17, 1931.

References made of record:

Trumble,	1,281,884,	Oct. 15, 1918,	196-48
Pielsticker,	477,153,	June 14, 1892,	196-58
Ellis,	1,396,999,	Oct. 4, 1913,	196-48
Russian,	4782, (175 of 1891)	(1 sh.)	196-59
Testelin (Br.)	16,881 of 1908	(2 shs.)	196-52

Pages 5, 6, 7, 9 and 49 of Bulletin 114 of the Bureau of Mines 1916, copy in Div. 31.

Claims 24 to 31 inclusive which formed the issue of interference 49,355, which was decided adversely to the applicant, stand finally rejected (Rule 132).

Claims 32 to 39 inclusive, 10, 11, 20 and 22 which formed the issue of interference 55,610, stand allowed, as at present advised. In view of the decision in interference 49,355; and in view of the action of the various tribunals in interferences 49,654, and 52,543 in which the parent case was involved, in rejecting certain of the counts as unpatentable over Trumble 1,281,884; it is necessary to reconsider certain of the claims herein which were previously deemed allowable. It is noted that in interference 49,656 in which the parent case was also involved, the Law Examiner held

the count of that interference unpatentable over either the Russian patent, Pielsticker, Testelin or the disclosure in the Bulletin 114 citation.

3363 Claims 1 and 7 are rejected as unpatentable over Trumble; and also as unpatentable over the issue of interference 49,355 the step of raising oil to a cracking temperature without material decomposition having been held unpatentable over Trumble. Note the action of the Law Examiner on proposed count 21, paper 39, interference 52,305.

Claims 2 and 6 are now rejected as unpatentable over Ellis, 1,396,999 in which kerosene is returned to the drum. The limitation "substantially free from decomposition" in claim 6 is unpatentable for reasons already noted.

It is now noted that the language of lines 7-10 claim 9 is somewhat ambiguous and would not differentiate from a process such as Pielsticker in which the condensate is returned to the supply tank, and the mixture then forced to the coil. Claim 9 is accordingly rejected on Pielsticker. It is now noted that the language of lines 6-8, claim 37 could also be improved to more clearly define over Pielsticker.

Claims 12 to 19 are rejected as unpatentable over the issue of interference 49,355. The step of raising to a cracking temperature without material decomposition has been held unpatentable for reasons above noted.

Claims 3 to 5, 8, 21 and 23 stand allowed, as at present advised.

W. N. Holmes,
Examiner, Div. 31.

CSD.

3410 Serial No. 630,242

DEPARTMENT OF COMMERCE
United States Patent Office
Washington

Sept. 21, 1932

Otto Behimer
Assor etc.

Your Application for a patent for an Improvement in Process for making gasoline filed Apr. 6, 1923 has been examined and Allowed with 44 claims.

The final fee, *(THIRTY) ~~*Twenty Five*~~ Dollars, with $1

*Matter in parentheses inserted.

Additional For Each Claim Allowed in Excess Of 20, must be paid not later than Six Months from the date of this present notice of allowance. If the final fee be not paid within that period, the patent will be withheld, but the application may be renewed within one year after the date of the original notice with a renewal fee of $*(30) ~~25~~ and $1 additional for each claim in excess of 20.

The office delivers patents upon the day of their date, on which date their term begins to run. The preparation of the patent for final signing and sealing will require about four weeks, and such work will not be begun until after payment of the necessary final fee.

When the final fee is paid, there should also be sent, Distinctly And Plainly Written, the name of the Inventor, Title Of The Invention, And Serial Number As Above Given, Date Of Allowance (which is the date of this circular), Date Of Filing, and, if assigned, the Names Of The Assignees.

If it is desired to have the patent issue to an Assignee Or Assignees, an assignment containing a Request to that effect, together with the Fee for recording the same, must be filed in this office on or before the date of payment of the final fee.

After issue of the patent, uncertified copies of the drawings and specifications may be purchased at the price of Ten Cents Each. The money should accompany the order. Postage stamps will not be received.

The final fee will Not be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

Notice—When The Number Of Claims Allowed Is In Excess Of 20, No Sum Less Than $*(30) ~~25~~ Plus $1 Additional For Each Claim In Excess Of Twenty Can Be Accepted As The Final Fee.

Respectfully,
Thomas E. Robertson,
Commissioner of Patents.

Donald H. Mace,
405 Lexington Ave.,
New York, N. Y.

(In left-hand margin) By The Act Of June 30, 1932, The Final Fee Is $30, And $1 For Each Claim In Excess Of 20. In Remitting The Final Fee Give The Serial Number At The Head Of This Notice.

(In right-hand margin) Uncertified Checks Will Not Be Accepted.

3421 **DX 178.**

390

DEPARTMENT OF COMMERCE

United States Patent Office

To all persons to whom these presents shall come, Greeting:

This Is to Certify that the annexed is a true copy from the records of this office of the File Wrapper and Contents, in the matter of

Interference Number 49,355,

Dubbs *vs.* Holmes, Manley and Behimer,

Subject Matter:

Process of Making Gasoline.

In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this twelfth day of May, in the year of our Lord one thousand nine hundred and thirty-two and of the Independence of the United States of America the one hundred and fifty-sixth.

Thomas E. Robertson,
Commissioner of Patents

(Seal)

Attest:

D. E. Wilson,
Chief of Division.

3423 Room No. 169 Letter No. A
Address only
"The Commissioner of Patents,
Washington, D. C."
CSD-AMT

DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington, D. C.

Apr. 18, 1923.

Examiner of Interferences:

An interference is found to exist between the following cases, and in respect to the invention therein specified, to wit:

Cases.

1. Names ~~*Ralph C. Holmes, Frederick T. Manley and*~~ Otto Behimer

Post-office addresses, respectively—c/o Texas Company, 17 Battery Place, New York, N. Y.; Houston, Texas; and Port Arthur, Texas.

Title Process for Making Gasoline

Filed Apr. 6, 1923 Ser. No. 630,242 Pat'd No. _____ (being a division of Ser. No. 263,562, filed Nov. 21, 1918)

Attorney R. J. Dearborn of 17 Battery Place, New York, N. Y.

Associate Att'y _____ of _____

Assignee The Texas Company (a corp. of Texas) of 17 Battery Place, New York, N. Y.

2. Name Carbon P. Dubbs

Post-office address 905 Greenleaf Ave., Wilmette, Ills.

Title Process of Converting Hydrocarbons

Filed Mar. 19, 1919 Ser. No. 283,673 Pat'd Oct. 4, 1921 No. 1392629

Attorney Frank L. Belknap of 1014 1st Nat. Bank Bldg., Chicago, Ills.

Associate Att'y _____ of _____

Assignee _____ of _____

For conversion of sole appln for joint appln of Holmes, Manley and Behimer—see Paper No. 88.

Intf. Number 49355

Intf. Declared Jun 8 1923

Statements Due Jul 16 1923

Invention.

3424 Count 1.

A process of converting relatively heavy into lighter hydrocarbons, consisting in passing a stream of oil through a zone where the oil is heated to a cracking temperature but without substantial vaporization, passed thence to and through a zone where vaporization takes place, removing the vapors, subjecting them to reflux condensation, returning reflux condensate for further cracking, removing the residue, after said vaporization, from the system without permitting intermingling of any substantial portion thereof with the oil in the heating zone and maintaining a pressure upon the material during distillation.

Count 2.

A process of converting heavy into lighter hydrocarbons consisting in passing in an advancing direction a stream of oil through a zone where the oil is heated to the cracking temperature but substantial vaporization prevented and thence to and through a zone where vaporization takes place, removing the vapors and condensing them, returning a portion of the condensate to the heating zone for further treatment, removing the residue after said vaporization from the system without permitting contact or intermingling of any substantial portion thereof with the oil in the heating zone and maintaining a vapor pressure upon the material under treatment during distillation and condensation.

Count 3.

A process of converting heavy into lighter hydrocarbons consisting in passing in an advancing direction a stream of oil through a heating zone where the oil is heated to the cracking temperature but substantial vaporization prevented and thence to an enlarged chamber where vaporization takes place, removing the vapors from said chamber and condensing them and returning a portion of the condensates to the heating zone for further treatment, withdrawing substantially continuously the residue from said chamber and discharging the same entirely apart from the feed of oil to the heating zone and maintaining a vapor pressure upon the material under treatment during distillation and condensation.

Count 4.

A process of converting heavy into lighter hydrocarbons consisting in passing in an advancing direction a continuous stream of oil through a heating zone where the oil is heated to the cracking temperature but substantial vaporization prevented and thence to a chamber where vaporization takes place, discharging from the chamber substantially continuously a quantity of the residue proportional to the amount of oil supplied to the heating zone and said vaporization, condensing the vapors and returning a portion of the condensates to the stream of oil for retreatment in the heating zone and maintaining a vapor pressure upon the material under treatment during distillation and condensation.

2

3425 Count 5.

A continuous process for cracking hydrocarbons consisting in passing the same in a stream in an advancing direction from an inlet point to a discharge point separated and entirely disassociated from the inlet point, subjecting the material in the first stage of its travel to a cracking temperature while preventing substantial vaporization, affording a vaporization space above the stream during the second stage of the travel thereof to said discharge point, taking off the vapors from said vapor space and subjecting them to a condensing action, discharging into the stream at a point remote from that where vaporization occurs a portion of the condensates and maintaining a vapor pressure on the material under treatment during distillation and condensation.

Count 6.

A process of cracking oil consisting in continuously passing a stream of oil through a series of tubes seated in a cracking zone where the oil is heated to the cracking temperature but substantial vaporization prevented, and thence to an enlarged vapor chamber where vaporization takes place, removing the vapors from said chamber, subjecting them to an initial condenser where a portion of the vapors are condensed, subjecting the uncondensed portion of the vapors to a final condensation, returning the condensate from said initial condensation to the inlet side of the cracking tubes and continuously drawing off the residue from the vapor chamber and preventing it from re-

turning to the cracking zone and maintaining a pressure on the oil during treatment.

Count 7.

A process of cracking oil consisting in progressively passing the oil through a heating zone where the oil is heated to the cracking temperature but substantial vaporization prevented and then passing the heated oil through a vaporizing zone, forcing the carbon containing residue out of the system and preventing it from coming in contact with the incoming charging stock taking off vapors from the vapor zone and condensing them and returning condensate therefrom to and mixing it with the fresh charging stock which is being passed through said zone.

Count 8.

The process for treating hydrocarbon oil by heating it to a cracking temperature and condensing the condensable products volatilized therefrom under pressure, consisting in raising the oil to a cracking temperature without substantial vaporization in a heating zone, passing the heated oil to a second zone where vaporization occurs, removing the vapors and subjecting them to condensation, subjecting a portion of the condensate to further cracking, taking off the carbon containing residuum from the second zone without permitting access of any substantial portion thereof to the heating zone and maintaining a pressure upon the materials under treatment, substantially as described.

3

3426 The relation of the counts of the interference to the claims of the respective parties is as follows:

Counts	Holmes et al.	Dubbs
1	25	1
2	26	2
3	27	3
4	28	4
5	29	5
6	30	7
7	31	8
8	32	9

Wellington B. Johnson,
Actg. Examiner, Div. 31.

C.S.D.
(Counts compared)

4

3430 2—404

ASSIGNMENT

On Oct. 29, 1921, (acknowledged) Carbon P. Dubbs Assigned to Universal Oil Products Company, corp. of So. Dak., 208 So. La Salle St., Chicago, Ill., all his right, title and interest in patent 1,392,629, including all foreign rights. Recorded Oct. 31, 1921, in Liber J 114, Page 292.

3431 UNITED STATES PATENT OFFICE.

(Stamps) Docket Division Jun 28 1923 U. S. Patent Office Mail Room Jun 28 1923 U. S. Patent Office.
In re interference No. 49355
Holmes, Manley & Behmer
vs.
Dubbs

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

We hereby revoke power of attorney heretofore given to Mr. Frank L. Belknap, with reference to the issued patent to C. P. Dubbs, No. 1,392,629, dated October 4, 1921, issued on application Serial No. 283,673, filed March 19, 1919, and with reference to the above interference, including all other powers heretofore given and we hereby appoint William F. Hall, Victor Building, Washington, D. C., our attorney in the above entitled interference with the usual powers.

Signed at Chicago, Illinois, this 26th day of June 1923.

Universal Oil Products Company,
By R. J. Dunham,
Vice President.

Attest:
J. G. Alther,
Secretary.

I agree to the above
Carbon P. Dubbs.
Canceled 25 Cent Revenue Stamp.
Accepted Jul 2 1923
T. E. Robertson,
Commissioner.

3439 Room No. 261 Paper No. 10.

Address Only
"The Commissioner of Patents,
Washington, D. C."
and not any official by name
LBF

DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington, D. C.

Aug. 31, 1923.

In re Interference No. 49355.
Dubbs
vs.
Holmes, Manley and Behimer.
} Before the Examiner of Interferences.

(Stamp) Patent Office Aug 31 1923 Mailed.

Please find below a communication from the Examiner in charge of Interferences in regard to the above cited case.

Very respectfully,
Thomas E. Robertson,
Commissioner of Patents.

The stipulation filed August 30, 1923, is approved and in accordance therewith the time within which preliminary statements may be filed in this case is hereby extended to October 16, 1923.

W. S. Richman,
Examiner of Interferences.

16

3440 IN THE UNITED STATES PATENT OFFICE.

Dubbs
vs.
Holmes, Manley, et al. } Interference No. 49355.

PRELIMINARY STATEMENT OF CARBON P. DUBBS.

State of Illinois, } ss.
County of Cook. }

I, Carbon P. Dubbs, of Wilmette, in the County of Cook and State of Illinois, being first duly sworn, doth depose and say that I am a party to the Interference declared by the Commissioner of Patents, June 8th, 1923, between my Patent No. 1,392,629 issued on October 4th, 1921, and the application of Ralph C. Manley, et al, for a process of converting hydrocarbons; that I conceived the invention set forth in the Declaration of Interference on or about the 26th day of December, 1916; that on or about the same date I first made drawings of an apparatus for carrying out said invention, and on the same date explained the process to others; that on or about the 11th day of October, 1918, I first made a written description of said invention, and that I first reduced the invention to practice on or about the 10th day of June, 1917 at Wilmette, in the County of Cook and State of Illinois, and that since said date I have from time to time practiced the same invention.

Carbon P. Dubbs.

Subscribed and Sworn to before me this 2nd day of October, 1923.

Marie V. Lagerstadt,
Notary Public.

(Seal)

17

3441 Address Only
The Commissioner of Patents,
Washington, D. C.

FAN

DEPARTMENT OF THE INTERIOR
United States Patent Office
Washington, D. C.

Oct. 8, 1923.

In the Matter of the Interference of Dubbs *vs.* Holmes et al. } Before the Examiner of Interferences. Intf. No. 49,355.

Sir:

The preliminary statement of Carbon P. Dubbs has been received and filed.

By direction of the Commissioner:
Very respectfully,
C. C. Henry,
Chief Clerk.

William F. Hall,
Victor Bldg.,
Washington, D. C.

18

3442 IN THE UNITED STATES PATENT OFFICE.

Carbon P. Dubbs
vs.
Ralph C. Holmes, Frederick T. Manley, Otto Behimer } Interference No. 49355.

PRELIMINARY STATEMENT OF RALPH C. HOLMES, FREDERICK T. MANLEY AND OTTO BEHIMER.

Ralph C. Holmes, Frederick T. Manley and Otto Behimer, being duly sworn depose and say that they are parties to the interference declared by the Commissioner of Patents, June 8, 1923, between their application for letters patent for a Process of Making Gasoline, filed April 6, 1923, Serial No. 630242, as a division of their application for a Process of Making Gasoline, Serial No. 263562, filed November 21, 1918, and patent numbered 1,392,629 for a Process of Con-

verting Hydrocarbons, granted October 4, 1921 to Carbon P. Dubbs, on an application Serial No. 283,673, filed March 19, 1919; that they conceived the inventions set forth in the declaration of interference, made sketches thereof and disclosed the same to others between Feb. 25, 1916 and November 6, 1916; that first working drawings thereof were made on or about November 6, 1916; that the first

19

3443 written description thereof was made on or about June 20, 1917; that they first reduced their inventions to practice by the successful operation of a full sized apparatus during the period from May 30th to June 1st, 1917; that the invention has been practiced extensively on a commercial scale since that time; and that no applications for letters patent on the invention have been filed by them in any foreign country before the filing date of their parent application for letters patent of the United States.

State of New York }
County of New York } ss.

Ralph C. Holmes.

Sworn to and subscribed before me this 23rd day of August, 1923.

Beatrice Morris,
Notary Public.
New York Co. Clerk's No. 163
New York Co. Register's No. 5050

(Seal)

State of Texas }
County of Harris } ss.

Frederick T. Manley.

Sworn to and subscribed before me this 27th day of August, 1923.

John R. Moore,
Notary Public, Harris Co., Texas.

(Seal)

State of Texas }
County of Jefferson } ss.

Otto Behimer.

Sworn to and subscribed before me this 28 day of August, 1923.

Eunice M. Rogers,
Notary Public in and for Jefferson County, Texas.

(Seal)

20

3444 DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington

FAN

Oct. 15, 1923.

In the matter of the Interference of Dubbs *vs.* Holmes et al } Before the Examiner of Interferences. Intf. No. 49,355.

Sir:

The preliminary statement of Holmes et al has been received and filed.

By direction of the Commissioner:

Respectfully,

C. C. Henry,
Chief Clerk.

R. J. Dearborn,
17 Battery Place,
New York, N. Y.

3445 Room No. 261 Paper No. 15.

Address only
The Commissioner of Patents
Washington, D. C.

DEPARTMENT OF THE INTERIOR

United States Patent Office

JHD Washington

October 19, 1923.

In Re Interference No. 49355.
Dubbs
vs.
Holmes, Manley and Behimer.
} Before the Examiner of Interferences.

(Stamp) U. S. Patent Office Oct 19 1923 Mailed.

Please find below a communication from the Examiner in charge of Interferences in regard to the above-entitled case.

Very respectfully,
Thomas E. Robertson,
Commissioner of Patents.

The parties to the above-entitled interference are hereby notified that their preliminary statements are approved, and that testimony must be taken, forwarded, and printed in accordance with the published Rules of Practice of the office.

The dates of filing and the Serial numbers of the applications are given, and the times for taking testimony and for final hearing are set as follows:

No testimony to be taken within thirty days (see Rule 109 and paragraph 1 of Rule 122).

Carbon P. Dubbs filed March 19, 1919, No. 283,673, patented Oct. 4, 1921, No. 1,392,629.

Testimony in chief to close January 19, 1924.

Ralph C. Holmes, Frederick T. Manley and Otto Behimer filed April 6, 1923, No. 630,242, division of No. 263,562, filed Nov. 21, 1918.

Testimony to close February 19, 1924.

Rebuttal testimony of Dubbs to close March 5, 1924.
Final hearing May 6, 1924, at 11 A. M.

W. L. Ruckmay,
Examiner of Interferences.

22

3446 IN THE UNITED STATES PATENT OFFICE.

(Stamps) Docket Division Oct 23 1923 U. S. Patent Office. Documentary 25 cents.

Dubbs
vs.
Holmes, Manley & Behimer } Interference No. 49355.

ASSOCIATE POWER OF ATTORNEY.

Hon. Commissioner of Patents,

Sir:

I hereby appoint Charles M. Thomas, 916 G Street, N. W., Washington, D. C., as my associate in the matter of the Dubbs patent No. 1392629 now involved in interference No. 49355, Dubbs *vs.* Holmes, Manley and Beheimer.

I request, however, that all correspondence affecting this interference from the Patent Office be mailed to me as principal attorney of record.

Signed at Washington, D. C., this 23rd day of October, 1923.

William T. Hall.

23

3449 Paper No. 19.

DEPARTMENT OF THE INTERIOR

United States Patent Office

MCV Washington, D. C.

November 15, 1923.

In Re Interference No. 49,355.
Dubbs
vs.
Holmes, Manley and Behimer.
} Before the Examiner of Interferences.

(Stamp) Patent Office Nov 15 1923 Mailed.

Please find below a communication from the Examiner in charge of Interferences in regard to the above-cited case.

Very respectfully,

Thomas E. Robertson,
Commissioner of Patents.

The stipulation filed November 13, 1923, is approved, and the times herein are extended as follows:

Motion period to close December 19, 1923.

Dubbs' testimony in chief to begin December 19, 1923, and close February 19, 1924.

Testimony of Holmes, Manley and Behimer to close March 19, 1924.

Dubbs' rebuttal testimony to close April 3, 1924.

Final hearing June 3, 1924, at 11 A. M.

W. L. Ruckman,
Examiner of Interferences.

26

3450 IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Division Dec 22 1923 U. S. Patent Office.

Dubbs
vs.
Holmes et al. } Interference No. 49,355.

STIPULATION.

It is hereby stipulated by and between counsel that the time for bringing motions, and before testimony shall start, in the above entitled case, shall be extended to and including December 22, 1923.

William F. Hall,
Attorney for Dubbs.
R. J. L. Bulong,
Attorney for Holmes et al.

27

3451 IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Division Dec 22 1923 U. S. Patent Office.

Dubbs
vs.
Holmes, Manley, et al. } Interference No. 49355.

PRELIMINARY STATEMENT OF CARBON P. DUBBS.

State of Illinois }
County of Cook } ss.

I, Carbon P. Dubbs, of Wilmette, in the County of Cook and State of Illinois, being first duly sworn, doth depose and say that I am a party to the Interference declared by the Commissioner of Patents, June 8th, 1923, between my Patent No. 1,392,629 issued on October 4th, 1921, and the application of Ralph C. Manley, et al., for a process of converting hydrocarbons; that I conceived the invention set forth in the Declaration of Interference on or before the 29th day of July, 1916; that on or before said date, I made drawings of an apparatus for carrying out said

invention, and on the same date explained the process to others; that on or before the date last given, I first made a written description of said invention, and that I first constructively reduced the invention to practice on the 27th day of January, 1917, and actually reduced it to practice on or about the 10th day of June, 1917, at Wilmette, in the County of Cook and State of Illinois, and that since said date I have from time to time practiced the same invention.

Carbon P. Dubbs.

Subscribed and Sworn to before me this 2nd day of November, 1923.

Marie U. Lagerstadt,
(Seal) *Notary Public.*

28

3452 IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Division Dec 22 1923 U. S. Patent Office.

Dubbs
vs.
Holmes, Manley, et al. } Interference #49,355.

MOTION TO AMEND PRELIMINARY STATEMENT.

And now comes C. P. Dubbs, above named, and moves for leave to substitute the annexed preliminary statement for that originally filed by him in this case, for the reasons set forth in the accompanying affidavits of C. P. Dubbs, Frank L. Belknap, and William F. Hall.

William F. Hall,
Attorney for C. P. Dubbs.

29

3453 IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Division Dec 22 1923 U. S. Patent Office.

Dubbs,
vs.
Holmes, Manley and Behimer. } Interference No. 49355.

AFFIDAVIT.

State of Illinois, }
County of Cook. } ss.

Carbon P. Dubbs, being first duly sworn, deposes and says that he is the patentee of United States Patent No. 1,392,629 involved in the above entitled interference.

That when this interference was declared—June 8th, 1923,—he was in California in attendance upon the taking of testimony in the case of Universal Oil Products Company *vs.* Standard Oil Company of Indiana, wherein infringement is charged of patent No. 1,123,502 granted to his father Jesse A. Dubbs, and that his presence was required throughout the taking of such testimony, and upon the conclusion was compelled to go to New York, Philadelphia, Baltimore and Pittsburgh, and except for a day or two was not at his office to give attention to this case until September 24th, 1923. Affiant then gave immediate attention to the gathering of data relating to his conception and development of the invention disclosed in his patent last named; that on Saturday September 29th, 1923, he had an interview with his present attorney, William F. Hall, Esq., in regard to the preparation of the preliminary statement to be filed in the above entitled interference, and on the following day, Sunday September 30th, 1923, he had a conference at the office of

30

3454 Frank L. Belknap, Esq., Chicago, Illinois, with the latter and with said Hall in respect to such interference.

That as a result of the investigation which he had made as aforesaid, and discussion of the material found at that time, the preliminary statement filed in this case on his behalf was prepared, and it was believed at that time that

such preliminary statement accurately and correctly set forth the matters required to be set forth in the preliminary statement under the rules of the United States Patent Office.

That at the time affiant looked up his data respecting the conception and development of the subject matter of this interference, he did not have available copies of his applications for patent filed in the Patent Office, and it did not occur to him at that time to obtain or examine such applications or copies thereof, and it did not occur to him before or at the time he furnished the data for his preliminary statement or signed the same, that he had pending in the Patent Office applications for patent disclosing the same or substantially the same subject matter as is stated in the issue of the above entitled interference; that affiant met Frank L. Belknap in Kansas City on or about the 24th day of October, 1923, and was present at Kansas City with the said Belknap during the remainder of that week and during this period the said Belknap called to his attention his applications for patent serially numbered 144,959 filed January 27th, 1917 renewed as 522,397; 208,206 filed December 21st, 1917 and 260,957 filed November 4th, 1918, and asked him why he had not referred to the same or to the work done by him on the inventions disclosed therein, in the conferences which were had for the

31

3455 purpose of preparing the preliminary statement which was filed in this case. Affiant at that time was wholly at a loss to account for his failure to recall the subject matter of these applications at the time he had under consideration and under preparation the preliminary statement which was filed herein, and is now unable to give any explanation of his failure to recall this subject matter, except that he had not had occasion to review these applications for a number of years last past, and that he has been constantly and unremittingly engaged in the commercial development work of the Universal Oil Products Company, and in connection with the aforesaid suit brought by the Universal Oil Products Company against the Standard Oil Company.

Affiant now believes and asserts the fact to be that each of said applications last enumerated fully and completely disclose the subject matter of the present interference, and that the conception of the invention disclosed in application serial No. 522,397 filed January 27th, 1917,

occurred at least as early as July 24th, 1916, and that during the month of July, and prior to the 24th of July, 1916, he disclosed the subject matter of the last named application to others and made drawings fully illustrating the same.

Affiant further states that he believes that the new preliminary statement which he had this day prepared, and which by motion he shall seek to have substituted for his original preliminary statement, accurately and correctly sets forth the facts regarding his conception and development of the invention in issue in the above entitled case,

32

3456 and his failure to accurately set forth these matters in his original preliminary statement was not due to intention or desire to delay the interference, or to take advantage of the other parties, but was due, as previously set forth, to his failure to recall the filing of said applications serial Nos. 522,397, 208,206 and 260,957, and his work done in connection with the subject matter thereof.

Furthermore, affiant saith not.

Carbon P. Dubbs.

Subscribed and Sworn To before me this 2nd day of November, 1923.

Marie V. Lagerstadt,
Notary Public.

(Seal)

33

3457 IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Division Dec 22 1923 U. S. Patent Office.

Dubbs,
vs.
Holmes, Manley and Behimer. } Interference No. 49,355.

AFFIDAVIT.

State of Illinois, }
County of Cook. } ss.

Frank L. Belknap being first duly sworn, deposes and says that he is the original attorney of record for the party Dubbs in the above entitled Interference; that from the 28th day of April, 1923 until the 24th day of Septem-

ber, 1923, he was in California engaged in taking testimony in the suit of the Universal Oil Products Company, owner of the Dubbs application here in interference, against the Standard Oil Company of Indiana, in a suit for infringement of United States Patent No. 1,123,502, pending in the United States District Court at Kansas City, Missouri; that all of said time the said applicant Carbon P. Dubbs was in California assisting affiant in the trial of said cause; that during said entire period in California, affiant did not at any time see any applications of said Carbon P. Dubbs for the reason that affiant's time was entirely taken up in the trial of said cause; that both affiant and said Carbon P. Dubbs were devoting their entire time and attention to said testimony which was being adduced by the Standard Oil Company of Indiana, relative to the construc-

34

3458 tion and operation of numerous completed apparati relating to the treatment of petroleum oil; that many thousands of pages of testimony were taken in said case during said period in California; that as chief counsel for the plaintiff in said cause it was necessary for him to be present at each session of testimony, and that he was present at each day of the session; that in the evenings and on Sundays affiant was engaged in conferences with the other attorneys associated with him in said cause, and with the experts and that affiant had eight chemical experts in attendance in said cause.

Affiant further states that immediately after his return from California, he went direct to Kansas City, Missouri, in order to confer with local counsel there relative to preparation for argument on a motion brought by the defendant in the above entitled cause before the District Court relative to the further conduct of the cause before the Master trying it; that on Sunday September 30th, 1923, affiant came to Chicago and spent the entire day with William F. Hall of Washington, D. C., and the applicant Carbon P. Dubbs relative to the preparation of the preliminary statement in this interference, and companion interferences; that the following day affiant had to return to Kansas City, to attend the final argument on said motion; that none of the other attorneys associated with affiant, or who represent the Universal Oil Products Company, owner of said application, have been familiar with the early history of Dubbs' work in this art, including his work relative to the application in this interference

and in the companion interferences; that Thomas E. Scofield for several years past, until about September 1st, 1923,

35

3459 had charge of affiant's office in Chicago, and was familiar with the various Dubbs' applications.

Affiant further states that there are filed in the United States Patent Office more than eight hundred fifty applications for Letters Patent, pending at the present time, relating to petroleum oil, a large number of which are filed in the name of Carbon P. Dubbs.

Affiant further states that for the past few years his time has been so taken up in litigation for the said Universal Oil Products Company, that he has not personally been able to spend much time on these applications.

Affiant further states that the Texas Company, the owner of the Holmes-Manley-Behimer application in interference, has within the past year entered into contractural relations with the Gasoline Products Company, owners of the so called Cross Process, by which the Texas Company becomes in effect a partner of the Gasoline Products Company and shares in the profits enjoyed by the said Gasoline Products Company.

Affiant further states that while he was engaged this summer in the trial of said case in California, the said Gasoline Products Company, through its representatives attempted to induce the said Thomas E. Scofield to leave the employ of this affiant, and become the counsel for said Gasoline Products Company, and that despite affiant's requests both to said Thomas E. Scofield and said Gasoline Products Company that said Thomas E. Scofield be not employed by said Gasoline Products Company, and at any event that he be permitted to remain in the employ of said affiant until affiant returned from California to his office, that said Gasoline Products Company did enter into a contract with said Thomas E. Scofield whereby said Thomas

36

3460 E. Scofield left the employ of said affiant and severed his connections with affiant on September 1st, 1923; that when it became apparent to affiant that Thomas E. Scofield was to leave his employ and enter the employ of an active competitor of the Universal Oil Products Company, affiant telegraphed Charles M. Thomas, Mather Building, Washington, D. C., to proceed immediately to Chicago, and to remove from affiant's office and take to

Washington, all of the pending applications of the Universal Oil Products Company, including the applications involved in this interference and companion interferences, which said Charles M. Thomas did.

Affiant states therefore, that when he had the aforesaid conference with the said Carbon P. Dubbs and said William F. Hall on the 30th day of September, 1923, there were no applications in affiant's office relating to the cracking of petroleum oil; that affiant did not have in mind the detailed disclosures and drawings of these Dubbs' applications, and particularly the early applications, many of which he had not seen for a long time, but that affiant had, and still has a clear recollection as to the disclosures made by said Carbon P. Dubbs, and the reduction to practice made by said Carbon P. Dubbs of the process operated in an apparatus constructed substantially in all parts like the drawings of the patent in interference.

That at the conference which was had at the office of affiant on September 30th, 1923, for the purpose of preparing the preliminary statement, the constructions which were discussed were practically the same as those shown in the patent involved in this interference; that affiant had directed the said Dubbs to gather such information as he could relating to the subject matter of this patent, and at

37

3461 the conference said Dubbs had on hand such records as he had been able to find relating to such construction.

At that time affiant did not have available, copies of applications for Letters Patent, Serial Nos. 144,959 filed January 27th, 1917 renewed as 522,397, 208,206 filed December 21, 1917 and 260,957 filed November 4th, 1918, the same being in possession of Charles M. Thomas, as heretofore stated, and that affiant at that time did not recall the subject matter of these applications.

Therefore, in preparing the preliminary statement, no consideration was given to these applications, or to the subject matter thereof. Affiant further states that after he returned to Kansas City on the 1st day of October, 1923, the said Thomas E. Scofield having entirely severed his connections as aforesaid, affiant requested the said Charles M. Thomas to return to affiant's office such application files relating to petroleum oil as said Charles M. Thomas was not then actively prosecuting; that said hearing on the motion was heard on the 4th day of October,

1923, and affiant returned to Chicago on the 5th day of October, 1923, and left immediately for Boston, Massachusetts, and New York City, to attend to business of other clients which could no longer be deferred, and which already had been postponed for some months, due to affiant's absence in California; that said business in Boston necessitated several days' time initially in Boston, and a later trip to Boston relative to interference matters and also the discussion of suits brought and to be brought by affiant's clients the Flintkote Company of Boston, and also necessitated time spent by affiant with the Raybestos Company of Bridgeport, Connecticut relative to two suits pend-

38

3462 ing against said client; that affiant did not get back to his office until on or about the 20th day of October, 1923, that on his return to his office, he found that the said files had been returned as requested; that on the 22nd and 23rd days of October, 1923, affiant was in his office in Chicago, and at that time reviewed the pending Dubbs applications returned by said Charles M. Thomas, for the purpose of ascertaining the general status of said applications; that among the applications looked over by affiant, were the application Serial Nos. 522,397, 208,206 and 260,957; that in looking over the latter applications, affiant realized that the subject matter of the above entitled interference was probably fully disclosed in each of the same; that affiant was compelled to leave on the 24th day of October, 1923, for Kansas City in order to attend a continuation of the testimony in said case of the Universal Oil Products Company against the Standard Oil Company, and it was necessary also for the said Carbon P. Dubbs, whom affiant had not seen since the last hearing in Kansas City on the 4th of October, 1923, to leave for Kansas City to attend said hearing; that affiant was in Kansas City until the 31st day of October, and during the period he was in Kansas City, he spoke to the said Carbon P. Dubbs about the last named applications, and asked the said Dubbs why references had not been made thereto in the conferences which were had for the purpose of preparing the preliminary statement in this case; that said Dubbs at this time advised affiant that these applications and the subject matter thereof, had not occurred to him in considering the data to be used in connection with the preparation of

39

3463 the statement since he probably had his mind directed to the specific arrangement shown in the patent involved in the interference; that it is not the practice of the affiant to furnish copies of applications or drawings to said Dubbs, but that the only copies are always kept in affiant's office.

Affiant further states that after discussing the subject matter of said three applications before mentioned, affiant wired the said William F. Hall asking him to meet affiant in affiant's office on the 31st day of October, 1923, but that the said Hall did not reach Chicago until November 1st, 1923, to discuss the question of said interferences, that said conference was had on the 1st day of November, 1923, at which said Hall, said Dubbs and affiant were present, and that it was then and there decided that the subject matter of this interference is disclosed in each of the said above mentioned patents, and that the preliminary statement in this case should be amended to cover the subject matter disclosed in each of said applications.

Frank L. Belknap.

Subscribed and Sworn To before me this 2nd day of November, 1923.

Marie V. Lagerstadt,
Notary Public.

(Seal)

40

3464 IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Division Dec 22 1923 U. S. Patent Office.

Dubbs
vs.
Holmes-Manley and Behimer. } Interference No. 49,355.

AFFIDAVIT.

State of Illinois, }
County of Cook. } ss.

I, William F. Hall, being first duly sworn, depose and say that I am the attorney for the Universal Oil Products Company, and Carbon P. Dubbs in connection with the above entitled interference; that I first saw Mr. Dubbs in regard thereto on the 29th day of September, 1923; that

at that time I went over with him certain data he had bearing upon the subject matter of the interference, and on the following day had a conference with the said Dubbs and Frank L. Belknap, and in view of the data which they furnished me, I prepared the preliminary statement which was filed on behalf of Dubbs in this interference; that I have practically nothing to do with the preparation or prosecution of applications for patents filed by the said Dubbs or the Universal Oil Products Company, and had no knowledge whatsoever of applications for patent of Carbon P. Dubbs, serially numbered 144,959 filed January 27th, 1917 renewed as 522,397, 208,206 filed December 21st, 1917 and 260,957 filed November 4th, 1918, until November 1st, 1923,

41

3465 when said applications were shown to me at the office of Frank L. Belknap, Chicago, Illinois; that I thereupon carefully considered said applications, and reached the conclusion that they disclosed the subject matter of this interference. I also at that time considered the information furnished me by the said Dubbs regarding the development and disclosure by him of the subject matter of said application 522,897 filed January 27th, 1917, and reached the conclusion that this information required the filing of a new preliminary statement in the above entitled interference, and I thereupon prepared a new preliminary statement which sets forth accurately the conception and development work of the said Dubbs in connection with the subject matter in the above entitled interference as this has been now explained to me by the said Dubbs.

That the new preliminary statement has been sworn to by said Dubbs and is the statement which accompanies this affidavit, and motion for leave to substitute it for the original preliminary statement, and to shift the burden of proof in the above entitled cause.

William F. Hall.

Subscribed And Sworn To before me this 2nd day of November, 1923.

Marie V. Logerstadt,

(Seal) *Notary Public.*

42

3468 IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Division Dec 22 1923 U. S. Patent Office.

Dubbs
vs.
Holmes-Manley and Behimer. } Interference #49,355.

MOTION TO SHIFT BURDEN OF PROOF.

And now comes the party C. P. Dubbs, above named, and moves that the burden of proof be shifted in this case by making the party Dubbs the senior party thereto, because of reasons as follows:

(1) For that the application for patent of Ralph C. Holmes, Frederick T. Manley and Otto Behimer, Serial Number 263,562, filed November 21, 1918, does not sufficiently disclose the invention constituting the issue of this interference to form a foundation for claims coextensive with said issue.

(2) For that the invention defined by the issue of the above interference is disclosed in each and every of the pending applications for patent of C. P. Dubbs as follows: application filed January 27, 1917, serial number 144,979, renewed December 14, 1921, serial number 522,397, for a method and apparatus for treating petroleum; application filed October 20, 1922, serial number 595,743, as a continuation of application serial number 208,206, filed December 21, 1917, for a method of treating hydrocarbon oils; application filed September 3, 1918, serial number 252,301, for a process and apparatus for treating hydrocarbon; and application filed November 4, 1918, serial number 260,957, for a process and apparatus for producing low boiling point hydrocarbons.

William F. Hall,
Attorney for C. P. Dubbs.

45

3474 IN THE UNITED STATES PATENT OFFICE.

Before the Honorable Examiner of Interferences.

(Stamp) Docket Division Feb 9 1924 U. S. Patent Office.

Dubbs
vs.
Holmes-Manley and Behimer. } Interference No. 49,355.

MEMORANDUM IN SUPPORT OF MOTION TO SHIFT THE BURDEN OF PROOF.

The broader counts of this interference, of which count 5 may be taken as an example, involve a treatment of hydrocarbon oil characterized by the heating of the oil to a cracking temperature, during its passage from an inlet point to a remote discharge point, without effecting material disassociation of the molecular structure of the oil, then causing the oil in its passage to enter a zone where substantial vaporization takes place, then taking off the vapors from the zone where vaporization occurs and condensing the heavier portions thereof, and returning this condensate to the oil stream so that it will be again subjected to the cracking temperature; the whole being conducted under the pressure of the generated vapors.

Some of the counts specify that, in addition to the foregoing, the carbon containing residuum shall be discharged without any substantial portion thereof intermingling with the oil which is in, or to be passed through, the heating zone.

Neither the Dubbs patent involved in this interference, nor the Holmes-Manley-Behimer application, describes

51

3475 the treatment of the carbon-containing oil subsequent to its withdrawal from the vaporizing zone. As is understood by those skilled in the art, this residuum might be subjected to a process substantially identical with that described in the interfering cases, or it might form a portion only of the charging stock used in the practice of a similar process, or it might be utilized without further treatment, in the condition it is in when discharged from the cracking zone.

The process described in the interfering cases and particularly defined in the counts of the issue is fully set forth in applications filed by the party Dubbs prior to the date of filing of the Holmes-Manley-Behimer application, such applications of Dubbs being as follows:

Serial No.	Filed	
144,979	Jan. 27, 1917	(Renewed Dec. 14, 1921, Serial No. 522,397.)
208,206	Dec. 21, 1917	(Parent of application filed Oct. 20, 1922, Serial No. 505,743.)
252,301	Sept. 3, 1918	
260,957	Nov. 4, 1918	

In view of each of these applications, therefore, it appears that prima facie Dubbs was the first inventor of the subject matter involved in this interference, and therefore the burden of proof should be shifted to Holmes-Manley Behimer.

52

3489 Amendment Dubbs Preliminary Statement.

The motion asking leave to amend the Dubbs preliminary statement, or for leave to substitute a new preliminary statement, is supported by affidavits accounting for the failure to incorporate the correct dates in the original statement.

As is set forth in these affidavits, from a time long prior to the institution of this interference, the party Dubbs has been devoting all of his time and energies to the com-

66

3490 mercial development of the invention here in controversy, and to the suit brought by the owner of this application against the Standard Oil Company of Indiana, in which testimony and experiments have been going on practically continuously. In addition, a very unusual condition resulted in the files pertaining to the many specifications for patent which have been filed by Dubbs in the United States Patent Office being out of the office of the attorney for Dubbs, and wholly out of his possession, so that he, in looking up the data for his preliminary statement, failed to recall the subject matter of the applications which

have been hereinbefore discussed, and his work done in connection therewith.

When he had his attention directed to these applications, he immediately recalled the inventions and realized the bearing of the issue of this interference thereupon, and that of necessity the dates he had given in his preliminary statement were erroneous.

It is believed that this showing, particularly in view of the circumstances that no testimony has been taken in this case, and particularly in view of the statement of the Court of Appeals of the District of Columbia in *Stillwell* v. *Thompson*, 289 Fed. at page 596, requires that the motion to amend should be granted.

All of which is respectfully submitted.

Carbon P. Dubbs,
By William F. Hall,
His Attorney.

Washington, D. C.
Feb. 8, 1924.

67

3534 Paper No. 33.

2-224

DEPARTMENT OF THE INTERIOR.

United States Patent Office

Washington, D. C.

GAC

(Stamp) U. S. Patent Office Feb 13 1924 Mailed.

February 13, 1924.

In re Interference No. 49355.
Dubbs
vs.
Holmes, Manley and Behimer.
} Before the Examiner of Interferences.

Please find below a communication from the Examiner in charge of Interferences in regard to the above-cited case.

Very respectfully,
Thomas E. Robertson,
Commissioner of Patents.

The party, Dubbs, brings a motion to have the burden of proof shifted on five independent grounds (1) that the opposing party is not entitled to benefit from the filing date of the application that is parent to the one involved; (2) that Dubbs has full disclosure in application 144,979 renewed as 522,397; (3) that there is disclosure in 595,743, continuation of 208,206; (4) that application 252,301 is a disclosure; and (5) that the invention is set out in application 260,957.

Relative to this question of shifting the burden of proof it must appear that no doubt is present as to the disclosure before benefit is given of an earlier application. In *Munro* v. *Alexander* (106 O. G. 1009; 1903 C. D., 334) it is stated:

"Where there is doubt whether an earlier application discloses the invention involved in interference upon a later application, it is believed that the ends of justice will be best served by excluding the earlier application from the declaration of the interference. The applicant should not be given the earlier record date when there is reasonable ground for denying his right to it. By the failure to include the earlier application in the declaration the applicant is not deprived of the benefit of it. He

111

3535 may introduce it as a part of his evidence and may then contend that it discloses the invention. When introduced in that way, the application will be subject to full argument on both sides and will be considered by each tribunal called upon to pass upon the question of priority. The question is one which should be settled in that way rather than upon an interlocutory motion."

As to the first contention of the motion the earlier application of Holmes et al. is believed to have such a complete disclosure of the invention in issue as to warrant the award of the benefit of it. The primary examiner set it up as the parent case of the one in issue and the disclosures are substantially identical. Some contention is raised as to new matter with regard to specific statements of operation, but what these statements so relied upon are, is not pointed out, the argument merely indicating the necessity of statements as to temperature ranges, diameter of tubes and the like in the parent application. No fault was found by the primary examiner as to new matter, and the divisional application was filed following the insistence of the examiner. No reasonable ground appears for deny-

ing the benefit of the earlier application to Holmes et al.

A different situation presents itself as to Dubbs application 144,979. The issue here presented appears to be a process consisting in heating a stream of oil in one zone without vaporization and passing the stream to a second zone where vaporization takes place, the vapors being subjected to reflux condensation to provide condensate that is added to the stream of oil to be heated and the residue from the second zone being removed from the system. It is doubtful whether this issue in all its elements is present in the application. The invention therein is directed to a fractional distillation and condensation of vapors. The application teaches that the process involved is one wherein in any unit, as A_2 B_2, the oil that

112

3536 is heated in furnace B_2 passes into the bottom of the still A_2. The condensed vapors from A_2 are returned to the body of liquid in A_2 and the intermingled liquid and condensate are drawn off from the top of A_2 to pass into the next unit. It seems clear that this includes liquid residue that has not been in the vapor state and therefore fails to meet this issue. It is urged that this liquid residue in its upward passage through A_2 is substantially freed from its carbon content, or that A_2 acts as a settling tank in separating carbon containing liquid and so comes within the issue. There is nothing in the disclosure to indicate that A_2 has a function of separation or that substantially all the liquid passing through A_2 is not fed into the next heating unit. On the contrary, the application teaches that the liquid residue may be reheated for it states (p. 4, l. 32, at seq.)

"The residue flowing from still A_3 or the last still of the apparatus, may be re-run through the apparatus either with or without any other treatment; or it may be mixed with a fresh supply of raw material. The oil in each succeeding still is maintained at a higher temperature than the preceding still and as the oil passes from the first to the last still, it will have been subjected to progressively increasing temperatures until the desired amount of such oil has been converted into the desired product."

Again it states (p. 5, line 26):

"This novel method of treatment—will tend to condense any heavy vapors and cause them to be carried back with the residuum and again subjected to higher temperature."

In other words the natural inference appears to be that no separation of liquid is contemplated in the stills, but that practically the whole body of liquid rises through still A, and is passed into the next furnace. Such an action is contrary to the issue here involved which is to

113

3537 remove practically all the unvaporized residue from the system after one heating to crack temperature, and prevent its entry into the heating furnace. There is then, at least, doubt as to a disclosure being present in Dubbs application 144,979.

The next Dubbs' application, 595,743, returns to the oil to be heated a portion of the unvaporized liquid obtained from a prior heating. In this application there is a settling tank provided and this is stated to have the function of allowing carbon and other solids to settle, which are supposed to be drawn off. Returns are also provided for the condensates from the reflux condenser, one into the settling tank and the other to a pump. A doubt arises, as with the preceding application regarding the disclosure of removing the residue "without permitting any substantial portion thereof to intermingle with the oil in the heating zone," for it is not condensate alone but unvaporized liquid as well that is returned to the system.

Turning to the third application relied on by Dubbs, 252,301, this seems to be lacking in disclosure of the issue, and its teaching appears to be contrary thereto, for it states (p. 6, line 5):

"The unvaporized oil remaining in the still C passes through overflow line N through perforated pipe N^2 into the bottom of still C' and is there subjected to higher temperature."

The object of the invention in issue is to prevent reheating of unvaporized oil. Consequently, there is doubt as to the existence of support for the counts in this application.

The fourth application, 260,957, provides a vapor chamber in which a division of the unvaporized liquid is supposed to take place, the lighter portion being returned for reheating. The same situation is presented as in 595,743, in view of the return of such unvaporized liquid.

114

3538 Therefore it is doubtful whether any reliance can be placed in its disclosure of the issue.

Having found doubt as to the existence of disclosure

in the four Dubbs' applications, benefit cannot be given Dubbs at this time. Accordingly, the motion to shift the burden of proof is denied.

Dubbs also presents a motion to amend his preliminary statement to include the above cited applications and their dates, as Dubbs failed to allege disclosure in these applications. In view of the failure to find such disclosure as to warrant shifting the burden of proof, it seems unnecessary at this time to pass upon this motion to amend. Dubbs may renew the question of disclosure at final hearing, and the motion to amend can then be considered in connection therewith. If no disclosure is found, it is evident that the motion to amend becomes a moot one.

The motion to shift the burden of proof is denied and consideration of the motion to amend the preliminary statement is postponed until final hearing.

W. S. Ruckman,
Examiner of Interferences.

115

3539 In the United States Patent Office.

Before the Examiner of Interferences.

(Stamp) Docket Division Mar 1-1924 U. S. Patent Office.

C. P. Dubbs
vs.
Holmes, Manley & Behimer } Interference #49,355.

PROOF OF SERVICE.

City of Washington
District of Columbia } ss.

I, Elsie F. Joyner, being duly sworn, depose and say that on the 29th day of February, 1924, I sent by registered mail to R. J. Dearborn, Esq., 17 Battery Place, New York City, a copy of the annexed motion and supporting affidavit in the above entitled interference.

Elsie F. Joyner.

Sworn to and subscribed before me this 1st day of March, 1924.

Bennett F. Jones,
(Seal) *Notary Public.*

116

3540 IN THE UNITED STATES PATENT OFFICE.

Before the Examiner of Interferences.

(Stamp) Docket Division Mar 1-1924 U. S. Patent Office.

C. P. Dubbs
vs.
Holmes, Manley & Behimer } Interference #49,355.

NOTICE.

R. J. Dearborn, Esq.,
17 Battery Place,
New York City.

Sir:

Please take notice that on Saturday, the 8th day of March, 1924, at ten o'clock in the forenoon, or as soon thereafter as counsel can be heard, before the Honorable Examiner of Interferences at the United States Patent Office, Washington, D. C., I shall present a motion for the resetting of the times for taking testimony in the above entitled interference.

A copy of the aforesaid motion and supporting affidavit accompany this notice.

Very respectfully,
William F. Hall,
Attorney for C. P. Dubbs.

Washington, D. C.,
February 29, 1924.

117

3541 IN THE UNITED STATES PATENT OFFICE.

Before the Examiner of Interferences.

(Stamp) Docket Division Mar 1-1924 U. S. Patent Office.

C. P. Dubbs
vs.
Holmes, Manley & Behimer } Interference #49,355.

MOTION.

And now comes the party Dubbs above named and moves as follows:

(1) That the times for taking testimony on behalf of the party Dubbs in the above entitled case be reset to run concurrently with the times set for the taking of testimony on behalf of the party Dubbs in interference #49,656, Gomory *vs.* Cross *vs.* Dubbs *vs.* Holmes, Manley & Behimer; and

(2) That in resetting the times for taking testimony on behalf of the party Dubbs in the above entitled interference, he be accorded at least ninety days from the date of the order fixing the said time in which to complete his in-chief testimony.

Very respectfully,
C. P. Dubbs,
By William F. Hall,
His Attorney.

Washington, D. C.,
February 29, 1924.

3542 IN THE UNITED STATES PATENT OFFICE.

Before the Examiner of Interferences.

(Stamp) Docket Division Mar 1-1924 U. S. Patent Office.

C. P. Dubbs
vs.
Holmes, Manley & Behimer } Interference #49,355.

AFFIDAVIT.

City of Washington
District of Columbia } ss.

I, William E. Hall, being duly sworn, depose and say that I am the attorney of record in the matter of the application of the party Dubbs involved in the above entitled interference.

That said party Dubbs is now involved in interferences in the United States Patent Office as follows:

Isom *vs.* Dubbs, #43,301.

Dubbs *vs.* Holmes, Manley & Behimer, #49,355.

Dubbs *vs.* Clark *vs.* Cross, #49,809.

Gomory *vs.* Cross *vs.* Dubbs *vs.* Holmes, Manley & Behimer, #49,656.

That all of these Dubbs applications are owned by the Universal Oil Products Company of Chicago, Illinois, and in addition said company last named has pending in the United States Patent Office upwardly of eight hundred applications for patents relating to the cracking of hydrocarbon oils, many of which applications are for inventions made by the said Dubbs.

In addition, the said Universal Oil Products Company is the plaintiff named in a suit for the infringement of patent #1,123,502, J. A. Dubbs, Jan. 5, 1915, against the

119

3543 Standard Oil Company of Indiana, which suit has been pending for several years, and in which for more than a year the parties have been active in taking testimony.

The general counsel for the Universal Oil Products Company is Mr. Frank L. Belknap, of Chicago, Illinois. Prior

to September 1923 the only patent lawyers, or patent solicitors, assisting the said Belknap in connection with said suit, interferences, and applications, were Messrs. Thomas E. Scofield and Charles W. Thomas, and affiant.

That the Cross applications involved in the aforesaid interferences are owned by the Gasoline Products Company. The Holmes, Manley & Behimer applications are owned by The Texas Company.

The Universal Oil Products Company has been engaged for a number of years last past and is now engaged in the introduction of apparatuses and processes for cracking hydrocarbon oils embodying principally the inventions of Mr. Dubbs, and its apparatuses and processes are now being used by a very large number of independent refiners throughout the United States, and the investment in such apparatuses and processes is largely in excess of three million dollars.

Affiant is informed and therefore avers that The Texas Company, the Gasoline Products Company, and the Standard Oil Company of Indiana have pooled their patents, or inventions, relating to cracking of oil, or otherwise entered into contractual relations with one another, so that, in effect, they are co-partners under such patents, and are severally and jointly interested in keeping off of the market all cracking processes or apparatuses other than such processes or apparatuses which they may operate, or from the operation of which they derive a profit.

120

3544 That on or before Sept. 1, 1923, the Gasoline Products Company induced Mr. Thomas E. Scofield to sever his association with Mr. Frank L. Belknap and the Universal Oil Products Company and to enter the employment of the Gasoline Products Company.

That in the fall or winter of 1923, while in attendance in California in the taking of testimony on behalf of the defendant in the above entitled suit against the Standard Oil Company of Indiana, or in attendance upon certain tests which said defendant was making, the said Frank L. Belknap met with a serious accident, and since that time has been seriously incapacitated, and was advised by his physician that he must for a period desist wholly from work of any sort and seek a complete rest, and he is now resting and the probabilities seem to be that he will not be able to take part in the conduct of the aforesaid inter-

ference, or to give very much attention to the patent suits to be hereinafter referred to.

There thus remains to look after the aforesaid interests of the Universal Oil Products Company as patent counsel or solicitors Mr. Charles W. Thomas and affiant, and up to the present time they have been unable to obtain the services of a competent patent lawyer who could devote to these cases a substantial amount of time.

That recently the Standard Oil Company of Indiana has brought suit in the Seventh Circuit against the Universal Oil Products Company, and in the Eighth Circuit has brought suit against one of the customers of the Universal Oil Products Company, charging infringement of three patents: Humphreys, #1,119,700, Clark, #1,388,514, and Burton & Clark #1,448,254.

The Universal Oil Products Company has been able

121

3545 to obtain the assistance of Mr. Robert H. Parkinson of Chicago in connection with this litigation.

More recently The Texas Company has brought suit in the Third Circuit against one of the customers of the Universal Oil Products Company, charging infringement of three patents: #1,320,354, Adams, Oct. 29, 1919; #1,320,727, Adams, Nov. 4, 1919; and #1,327,263, Adams, Jan. 6, 1920.

The applications for the first and third of these Adams patents were each pending in the United States Patent Office for approximately ten years, and the file histories contain innumerable affidavits, briefs, petitions, etc., which makes the work of digesting such applications for the purpose of ascertaining whether originally the said applications contained proper foundation for the claims ultimately secured, an appalling undertaking.

It is believed and therefore averred that the filing of the aforesaid suits by the Standard Oil Company of Indiana and The Texas Company at this time was the result of a conspiracy, or understanding, between these parties, with the idea and purpose in view of preventing an adequate defense being made in these suits and an adequate showing being made in the aforesaid interferences, because of the fact that the Universal Oil Products Company did not have available at this time a sufficient number of lawyers familiar with patent matters to properly care for these litigations and interferences, and because it was

realized that it would be practically impossible to obtain at this time additional aid in caring for this work.

Affiant endeavored to obtain an extension of time to answer, or otherwise plead, in the aforesaid suit brought by The Texas Company, but was unable to obtain any material

122

3546 consideration from the counsel for The Texas Company, and finally said counsel did agree to enlarge the time for filing the answer until April 1st.

Affiant has arranged to devote approximately the next ten days to the consideration of the aforesaid Adams patent file histories and the preparation of the answer in said suit.

Affiant must be in Houston, Texas, not later than March 15th in connection with the accounting proceedings in the case of Hughes Tool Company *vs.* Reed Roller Bit Company, which case has been several times postponed and in which a further postponement cannot now be had.

In addition affiant is the attorney for the plaintiff in the case of Lauritzen and The Williams Foundry & Machine Company *vs.* Banner Machine Company, in which proceedings on the accounting have been set to commence in the early part of April.

Affiant is the attorney for the defendant in the case of Wood Grinding Service, Inc. *vs.* International Burr Corporation, in which plaintiff is pressing for a trial in the early part of April.

Affiant is the attorney for the defendant in the case of Phoenix Machine Company *vs.* Empire Monument Company, in which plaintiff is pressing for an early trial, and such trial will probably occur sometime in April.

Affiant is the attorney for the defendant in the case of Peele Company *vs.* Philadelphia Co., which case has been tried, but in which arguments are to be made at the convenience of the court.

In the case of the Universal Oil Products Company *vs.* Standard Oil Company of Indiana, proofs are to be started

123

3547 on behalf of the defendant on or about April 7th and the plaintiff has counted upon affiant attending these proofs on its behalf.

That at the time the decision was received in the above entitled case denying the motion to shift the burden of

proof affiant was engaged at Akron, Ohio, in adducing proofs in interference Harrison & Morton *vs.* Cadwell #48,635, and did not return to his office until Feb. 23, 1924.

Furthermore the services of Mr. C. P. Dubbs are absolutely essential to the Universal Oil Products Company in connection with the testimony which will be taken as aforesaid by the Standard Oil Company of Indiana, commencing on or about April 7th. These proofs are expected to last for several weeks and during that period the said C. P. Dubbs will have to give to that case unremitting and undivided attention.

For the foregoing reasons the Universal Oil Products Company could not in a shorter period than three months put in its proofs in the above entitled case, unless it proceeded to the detriment of its other litigations, or otherwise proceeded in a harassed and crowded way, which is not required by the demands of equity, right, or justice.

Furthermore the subject matter of the above entitled interference is very closely related to the subject matter involved in interference #49,656, Gomory *vs.* Cross *vs.* Dubbs *vs.* Holmes, Manley & Behimer.

In both cases there is involved an apparatus involving a heating coil through which the oil under treatment passes in a stream without substantial decomposition occurring, and from which heating zone the oil is discharged into an enlarged chamber in which decomposition does take place, and the proofs by Dubbs of his work in connection with the subject matter of the above entitled interference will necessarily require him to disclose the proofs which he must rely upon in said interference #49,656.

124

3548 Since the owner of the Cross application in the last named interference is virtually a partner, in so far as their patents are concerned, of The Texas Company, the owner of the Holmes, Manley & Behimer applications, involved in the last named interference and in the interference above entitled, it would obviously be unfair and work a serious disadvantage to the party Dubbs should he be required to make disclosure of this early work prior to the taking of testimony on behalf of Cross in said interference #49,656.

In the last named interference motions to dissolve and to add claims have been brought and the probabilities are that such motions will not be disposed of and testimony reset prior to the first of May, 1924.

Affiant therefore represents that for both of the foregoing reasons, (a) that it will be impossible for the Universal Oil Products Company to obtain the proper legal assistance requisite for the production of proofs on behalf of Dubbs before sometime in May in the above entitled case, and impossible for the party Dubbs to give proper attention to the above entitled case until after the session of testimony to be commenced on April 7th, as aforesaid, is concluded; and (b) because it would unfair to require Dubbs to disclose his early work in connection with the subject matter of the above entitled interference prior to the taking of testimony on behalf of Cross in interference #49,656, which testimony can hardly be taken before May 1, 1924, the times for taking testimony in the above entitled interference should be reset, so that the time for taking testimony on behalf of the party Dubbs therein will run concurrently with the times which will be hereinafter set

125

3549 for the taking of testimony on behalf of Dubbs in interference #49,656.

Furthermore affiant saith not.

William F. Hall.

Sworn to and subscribed before me this 29th day of February, 1924.

Jane M. Barrett,
Notary Public.

(Seal)

126

3551 2-224

MCV Paper No. 36.

Room No. 261

Address Only
"The Commissioner of Patents,
Washington, D. C."
And Not Any Official by Name

(Stamp) Patent Office Mar 8-1924 Mailed.

DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington, D. C.

March 8, 1924.

In re Interference No. 49,355.
Dubbs
vs.
Holmes, Manley and Behimer.
} Before the Examiner of Interferences.

Please find below a communication from the Examiner in charge of Interferences in regard to the above-cited case.

Very respectfully,
Thomas E. Robertson
Commissioner of Patents.

The junior party Dubbs has brought a motion (1) that times for taking testimony be reset in this interference so that the time for taking testimony on his behalf shall run concurrently with his time in companion interference No. 49,656, and (2) that in resetting the times the moving party be accorded at least ninety days in which to complete his testimony-in-chief.

The motion is not opposed. The senior party agrees with the moving party that the subjects-matter in the two interferences are so closely related as to make it desirable to take testimony in the two cases concurrently.

Interference No. 49,656 is in the motion stage. In view of the motions pending in it and of the time now fixed for

hearing on some of them, it is evident that if the present motion is granted and the time for the taking of testimony on behalf of the junior party is set to expire in ninety days, the times for taking testimony in the two interferences can not be set so as to run concurrently. As it can not now be foreseen how soon interference No. 49,656 will be in condition for setting times for the taking of

128

3552 testimony in it, the motion, in so far as it seeks to have times for taking testimony set so as to run concurrently in both interferences, is denied.

Without setting out in detail the matters alleged in the affidavit in support of the motion, it is sufficient to say that it is believed to be proper to give the moving party ninety days in which to close his testimony-in-chief. To that extent the motion is granted. Times are accordingly reset as follows:

Dubbs' testimony in chief to close June 9, 1924.

Testimony of Holmes, Manley and Behimer to close July 9, 1924.

Dubbs' rebuttal testimony to close July 24, 1924.

Final hearing September 24, 1924, at 11 A. M.

Louis W. Worrell,
Acting Ex'r of Ints.

129

3553 [Seven stipulations extending time for taking testimony were thereafter filed and approved by the Patent Office.]

3578 IN THE UNITED STATES PATENT OFFICE.

Dubbs
vs.
Holmes *et al.* } Interference No. 49355.

(Stamp) Docket Division Oct 20 1925 U. S. Patent Office.

MOTION TO DISSOLVE AS TO THE HOLMES ET AL APPLICATION.

Hon. Commissioner of Patents,

Sir:

Now comes the party Dubbs, by his attorney, and moves that the interference be dissolved as to the party Holmes et al,

First, on the ground that Holmes et al have no right to make the claims in issue because of the inoperativeness of the process as disclosed and claimed;

Second, that Holmes et al have no right to make the claims in issue all taken from the Dubbs patent, because his application will not support such claims; and,

Third, that Holmes et al have no right to make the claims in issue because no interference in fact exists between the Holmes et al application and the Dubbs patent.

The following reasons are urged in support of ground one of this motion:

(a) That the jet 7^a in the Holmes et al process as a means for returning reflux condensate to the heating coil renders the process inoperative.

(b) That in a pressure cracking process of the type shown in the Holmes et al application the use of a

154

3579 hydraulic jet for forcing reflux condensate through the heating tubes with the raw oil renders the process inoperative because such a jet to operate is dependent upon constant operating conditions with respect to the quantity and pressure of the charging oil from the pump or other source, as well as the pressure and the quantity of the reflux condensate and the jet discharge pressure.

(c) That in an oil cracking process as described in the

Holmes et al application, it is impossible to maintain without variation the conditions of temperature and pressure in the still and the quantity of reflux produced and accumulating therein, its temperature, specific weight and hydrostatic head. A jet is inoperative with such a still because if the pressure on the raw material is constant hence the velocity of the jet being constant any variation in the suction material that the jet is taking up, in temperature, specific weight, or hydrostatic head, would proportionately affect the amount of reflux condensate that the constant velocity jet would carry into the tubes and consequently affect the discharge head on the jet or the friction loss through the heating coils.

(d) That the process is inoperative because with a hydraulic jet it is impossible to hold to a definite proportion between the pressure liquid (charging oil) and suction liquid (reflux condensate) with a varying discharge head or pressure, and therefore when the jet tends to handle more suction liquid friction consequently builds up in the heating coils causing the pressure jet to discharge through the heating coils without handling the requisite reflux condensate, or to back up in the reflux condensate line.

155

3580 (e) That the process is inoperative because if the reflux or suction material supplied to the jet is dependent on a source whereby any variation in heating, evaporation, or condensation occurs, even to the slightest extent, it affects the volume of the reflux condensate, which, with the jet, renders the process inoperative.

(f) That in the process described variations in the friction pressure in the heating coil occur with great rapidity and frequency and with a jet operating under a constant feed pressure the variable discharge pressuet set up by reason of these fluctuations in the frictional pressure in the tube affects the velocity of the jet and renders the process inoperative because of the deposition of carbon in heating tube.

156

3584 Respectfully,
Charles M. Thomas
Attorney for Dubbs.

Washington, D. C.
October 20, 1925.

160

3591 msp

Address Only
The Commissioner of Patents
Washington, D. C.

(Stamp) Docket Clerk Oct 28 1925 Copy Mailed.

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

October 28, 1925.

In re Interference No. 49,355,
Dubbs *v.* Holmes et al.,
Process for Making Gasoline.

ORDER.

Dubbs' motion to dissolve will not be set for hearing. The reasons given in Dubbs' affidavit are not sufficient to justify the delay of nearly two years in bringing the motion.

Wm. A. Kinnan,
Acting Commissioner.
by C. H. Lane,
Law Examiner.

Mr. William F. Hall (for Dubbs),
Victor Bldg.,
Washington, D. C.

Mr. R. J. Dearborn (for Holmes et al.),
17 Battery Place,
New York, N. Y.

3596 kse

Address Only
The Commissioner of Patents
Washington, D. C.

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

(Stamp) Docket Clerk Nov 6-1925 Comp Mailed.

November 5, 1925.

In re Interference No. 49355,
Dubbs *vs.* Holmes, *et al.*,
Process for Making Gasoline.

ORDER.

Dubbs' request for reconsideration of the order dated October 28, 1925 does not present sufficient grounds for rescinding the order. Regardless of the first year's delay there is insufficient excuse for postponing the bringing of a motion since the early summer of this year.

Wm. A. Kinnan,
Acting Commissioner,
by C. H. Lane,
Law Examiner.

Mr. William F. Hall (for Dubbs),
Victor Bldg.,
Washington, D. C.

Mr. R. J. Dearborn (for Holmes, et al.),
17 Battery Place,
New York, N. Y.

3613 kse

Address Only
The Commissioner of Patents
Washington, D. C.

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

(Stamp) Docket Clerk Nov 18 1925 Copy Mailed.

November 17, 1925.

In re Interference No. 49355,
Dubbs *vs.* Holmes, *et al.*,
Process for Making Gasoline.

ORDER.

Dubbs' renewed motion to dissolve will not be set for hearing. It seems that instead of taking steps during the motion period to determine for himself the operativeness of his opponent's device, and moving party waited until long past the motion period and endeavored to obtain the desired information from persons having confidential relations with the opposing party. Failure in this attempt does not excuse the delay in bringing the motion or delay in beginning to make investigations by Dubbs on his own account.

Wm. A. Kinnan,
Acting Commissioner.
by C. H. Lane,
Law Examiner.

Mr. William F. Hall (for Dubbs),
Victor Bldg.,
Washington, D. C.

Mr. R. J. Dearborn (for Holmes et al.),
17 Battery Place,
New York, N. Y.

3614 IN THE UNITED STATES PATENT OFFICE.

(Stamps) Mail Room Dec 9 1925 U. S. Patent Office.
Docket Division Dec 9 1925 U. S. Patent Office.

Dubbs
vs.
Holmes, Manley, *et al.* } Interference No 49,355.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

Now comes the party Dubbs, by his attorney, and respectfully petitions your honor to review and set aside the decision of the law examiner denying the renewal of a motion filed by Dubbs to set for hearing a motion to dissolve filed herein, for the reason that the law examiner was wholly and completely in error respecting the facts relied upon and constituting the basis of his decision.

In his decision the law examiner said as follows:

"It seems that instead of taking steps during the motion period to determine himself the operativeness of his opponent's device, the moving party waited until long after the motion period and endeavored to obtain the desired information from persons having confidential relations with the opposing party."

The law examiner was wholly and completely in error and there is not the slightest foundation in the moving papers for his findings of fact as follows:

(1) That Dubbs took no steps during the motion period for determining the operativeness of his adversary's device.

(2) That Dubbs waited until after the expiration of the motion period and then endeavored to obtain the desired information.

(3) That Dubbs obtained information from persons

190

3615 having confidential relations with the opposing party.

The actual facts, as established by the moving papers, are as follows:

(1) That no testimony had been taken in this case at

the time the motion to dissolve was filed, and no testimony has been taken up to the present time, nor is there any likelihood of any testimony being taken because of the pendency undetermined of motions in companion interferences.

(2) As soon as Dubbs received copies of the Holmes application and well within the motion period, he carefully examined said papers and at that time noted that the sole appliance for returning the reflux condensate to the feed line is a liquid jet.

(3) That at that time Dubbs had no reason for reaching the conclusion that such liquid jet would not function perfectly in the situation where it was used.

(4) That the laws of physics involved in the operation of a liquid jet are understood by few engineers and consequently it was neither surprising nor an extraordinary circumstances that when he examined this Holmes application Dubbs did not appreciate that the liquid jet would not function.

(5) Having carefully examined the application and having been conscious of no feature of inoperativeness thereof, Dubbs had no occasion to further look into such application in the exercise of all of the care and caution which the law exacted of him, until

(6) Dubbs was reliably informed—not by one in confidential relation to the opposing party—that such oppos-

191

3616 ing party had endeavored to employ the liquid jet for performing the work it is called upon to do in said Holmes et al. application, and such attempt had resulted in failure.

(7) Thereupon Dubbs immediately moved with the greatest activity to get in touch with someone who could speak with authority in reference to the operation of a liquid jet in the situation in which it is placed in the Holmes et al. application, and without delay did succeed in getting in touch with an authority and in obtaining from him an opinion regarding the operation of such device and his reasons for such opinion.

(8) That said authority gave as his opinion the view that the liquid jet will not perform the work it is called upon to do in the Holmes et al. application, located and arranged as it is shown in said application, and gave the controlling laws of physics which would preclude said liquid

jet from operating successfully as shown in said Holmes application for returning the reflux condensate to the feed line.

(9) That immediately Dubbs succeeded in obtaining reliable information such as would permit him to file in good faith a motion to dissolve, such motion was prepared and filed.

192

3619 William F. Hall,
Attorney for Dubbs.

195

3632 SET

Address Only
The Commissioner of Patents
Washington, D. C.

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

(Stamp) U. S. Patent Office Commissioner's Office Dec 31 1925 Copy mailed.

December 31, 1925.

Recorded Vol. 152, P. 57.
In re Interference No. 49,355,
Dubbs *vs.* Holmes, Manley and Behimer
Process for Making Gasoline.

PETITION.

The party Dubbs petitions that the decision of the law examiner denying the renewal of his motion to dissolve be reviewed and set aside. The motion denies the operativeness of the process disclosed and claimed by Holmes, Manley and Behimer and their right to make the claims.

In view of the fact that a number of related interferences raising the same question is pending, which includes the parties Dubbs and Holmes, Manley and Behimer, in none of which testimony has been taken, it is believed that an

exception should be made in these cases to the usual rule as to the time for filing motions, in order that the operativeness of the means employed by Holmes, Manley and Behimer may be passed upon before putting the parties to the expense and inconvenience of taking testimony.

The petition of Dubbs is granted. The law examiner will fix the earliest available date for hearing Dubbs' motion.

Thomas E. Robertson,
Commissioner.

Mr. William F. Hall (for Dubbs),
Victor Building,
Washington, D. C.

Mr. R. J. Dearborn (for Holmes et al.),
17 Battery Place,
New York, N. Y.

208

3633 Paper No. 68.

Address Only
The Commissioner of Patents
Washington, D. C.
EEG

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

December 31, 1925.

Sir:

In Interference No. 49,355
Dubbs
vs.
Holmes, Manley & Behimer

The Motion to Dissolve filed by Dubbs will be heard by a Law Examiner on the 26th day of January, 1926.

The hearings will commence at One o'clock and as soon as the argument in one case is concluded the succeeding case will be taken up. This acts as a stay of proceedings—see Rule 123.

If any party, or his attorney or agent, shall not appear when the case is called, his right to an oral hearing will be regarded as waived.

The time allowed for arguments is thirty minutes each side.

By special leave, obtained before the argument is commenced, the time may be extended.

The moving party shall have the right to open and conclude, and a full and fair opening must be made.

Briefs may be filed in accordance with the provisions of Rule 163, last section.

Respectfully,
Thomas E. Robertson,
Commissioner of Patents.

To Carbon P. Dubbs,
c/o William F. Hall,
Victor Bldg.,
Washington, D. C.

To Holmes, et al.,
c/o R. J. Dearborn,
17 Battery Place,
New York City.

209

3696 Hearing:
December 15, 1926. MSP

IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Clerk Feb 9 1927 Copy Mailed.

Dubbs *vs.* Holmes, Manley and Behimer.
Patent Interference No. 49,355.

MOTION TO DISSOLVE.

Process of Making Gasoline.

Patent granted to Carbon P. Dubbs Oct. 4, 1921, No. 1,392,629, on application filed Mar. 19, 1919, No. 283,673.

Application of Ralph C. Holmes, Frederick T. Manley and Otto Behimer filed Apr. 6, 1923, No. 630,242, division of Serial No. 263,562, filed Nov. 21, 1918.

Mr. William F. Hall and Mr. Chas. M. Thomas for Dubbs.

Mr. R. J. Dearborn for Holmes, Manley and Behimer.

The party Dubbs moves to dissolve as to the party Holmes et al. on the following grounds:

First, on the ground that Holmes et al. have no right to make the claims in issue because of the inoperativeness of the process as disclosed and claimed;

Second, that Holmes et al. have no right to make the claims in issue all taken from the Dubbs patent, because his application will not support such claims; and,

Third, that Holmes et al. have no right to make the claims in issue because no interference in fact exists between the Holmes et al. application and the Dubbs patent.

The invention relates to a process of converting relatively heavy into lighter hydrocarbons by passing a con-

272

3697 tinuous stream of oil through a heating zone where the oil is heated to a cracking temperature but without substantial vaporization, passing it then to a vaporizing zone, removing all of the vapors, subjecting them to reflux condensation, returning all of the reflux condensate for further cracking, removing the residue after vaporization from the system without permitting it to intermingle in any substantial amount with the oil in the heating zone, and maintaining a pressure on the oil during treatment.

The eight counts herein involved are claims 1, 2, 3, 4, 5, 7, 8 and 9 of the Dubbs patent 1,392,629, issued October 4, 1921. Count 1 is reproduced as illustrative of the invention claimed:

1. A process of converting relatively heavy into lighter hydrocarbons, consisting in passing a stream of oil through a zone where the oil is heated to a cracking temperature but without substantial vaporization, passed thence to and through a zone where vaporization takes place, removing the vapors, subjecting them to reflux condensation, returning reflux condensate for further cracking, removing the residue, after said vaporization, from the system without permitting intermingling of any substantial portion thereof with the oil in the heating zone and maintaining a pressure upon the material during distillation.

In the first ground of his motion to dissolve Dubbs contends that Holmes et al. have no right to make the counts because of the inoperativeness of the process as disclosed and claimed.

This ground of the motion is fully discussed in Interference No. 52,543 to which reference is made. The counts in the instant interference are more specific than the counts

in Interference 52,543, in that they call for returning the reflux condensate to the heating zone for further cracking. No special apparatus is designed for the performance of this step. If the jet pump is unsuitable for this purpose, it would seem to require no more than the skill of an

273

3698 expert mechanic to make provision for injecting the reflux condensate into the charging line by some other means.

In his second ground for dissolution Dubbs contends that Holmes et al. have no right to make the counts because their application will not support them. In support of this contention the argument is offered that "the Holmes et al. specification fails to describe a process in which reflux condensate of kerosene and heavier fractions is repeatedly recycled through the heating coil for continued cracking on each cycle to decompose such heavier oils into lighter hydrocarbons such as gasoline".

On page 3, lines 15 to 21, of the parent application, Serial No. 263,562, in describing their process Holmes et al. state:

Although the process in its broad conception, is complete at this stage of the operation, the light products preferably continue the cycle, leaving the cracking zone in the form of vapor and gas. These vapors and gases are then subjected to a reduction in temperature, whereby the heavier constituents thereof such as kerosene, are condensed. The condensate is preferably combined with the charging oil entering the heating zone, thus completing the cycle.

Beginning with line 23 on page 4, it is further stated:

In cracking oil for gasoline, there is generally formed a considerable quantity of vapors heavier than gasoline, which may be generally designated by the term, kerosene. We preferably employ these heavier vapors as a carrier for the lighter vapors; they assist in maintaining a current of vapor by which the gasoline is removed from the cracking zone to a separator where the kerosene vapors are condensed and removed from the gasoline vapors which pass on to the condenser. The kerosene condensate, preferably at a temperature not materially below its boiling point, is injected or otherwise suitably forced into the heavy oil charge entering and flowing through the heating

tubes whereby a foamy agitated mixture is produced • • •. These kerosene constituents are an excellent mechanical conductor of heat, and there is thus produced a heat cycle which materially assists in maintaining the proper temperatures in the heating and cracking zones. By maintaining these bodies in constant circulation, the kerosene constituents, which under existing methods have

274

3699 been found so difficult to decompose into lighter products, are, in our system, ultimately reduced to gasoline.

At the bottom of page 9 of their specification the term kerosene is defined "as an example of those constituents which under the temperatures and pressures used is a vapor in the vapor line 13 but is condensable in the separator 15".

From the above excerpts it is clear that the term "kerosene" includes all vapors heavier than those of gasoline and that Holmes et al. do describe a process in which reflux condensate of kerosene is repeatedly recycled through the heating coil for continued cracking and ultimately reduced to gasoline. Since the temperatures (700° F. in the cracking drum) and pressure at which cracking takes place in the Holmes et al. process are substantially the same as the cracking temperatures and pressure of the Dubbs and the Cross processes the amount of kerosene and heavier fractions will be substantially the same in each process. The mere fact that Holmes et al. classify all hydrocarbons heavier than gasoline as "kerosene" does not render their process inapplicable to the counts. Further, not one of the counts is limited to "reflux condensate of kerosene and heavier fractions". In the counts the portion recycled is set forth broadly as "reflux condensate".

Count 1 is applicable to the Holmes et al. construction. Their invention is described as relating to improvements in cracking hydrocarbons whereby higher boiling hydrocarbons are decomposed into those of a lower boiling point. In their process a continuous stream of oil is passed through the coil 1 which is located in furnace 2. The oil is heated to a cracking temperature in the furnace "but without substantial vaporization". See parent case, page 6, lines 17, 18 and 19. From the heating coil the oil is passed

275

3700 through the cracking drum "where vaporization takes place" (page 7, lines 3, 4 and 5). The vapors are removed from the drum and subjected to "reflux condensation" in the separator 15 (line 16). The reflux condensate is returned for further cracking (lines 26, 27). The residue remaining after vaporization is drawn off (page 8, lines 22-24) from the system without permitting intermingling of any substantial portion. Since the residue is drawn off through valve 12 at the bottom of the cracking drum in which the oil moves slowly the residue will not intermingle with the "clean" oil to any great extent. Pressure is maintained on the system during operation (page 6, line 3 and page 8, lines 13-17). Thus it is seen that every step of count 1 reads upon the Holmes et al. disclosure with the same meaning as it does on the Dubbs' disclosure.

All of the counts are so similar to count 1 that their application to the Holmes et al. disclosure is obvious and further discussion is deemed unnecessary.

The third ground of Dubbs' motion is obsolete but this ground was treated as a reason for bringing the second ground of the motion and is fully discussed under the latter ground.

The motion to dissolve by Dubbs is denied.

I. P. Disney,
Law Examiner.

February 9, 1927.

3702 AGP Paper No. 85.

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

(Stamp) Patent Office Mar 19 1927 Mailed.

Please find below a communication from the Examiner of Interference in this case.

Thomas E. Robertson,
Commissioner of Patents.

Interference No. 49355.

Dubbs
vs.
Holmes, Manley and Behimer.

The times for taking testimony and for final hearing in this case are reset as follows:

Testimony in chief of Dubbs to begin June 20, 1927, and to close July 20, 1927.

Testimony of Holmes, Manley and Behimer to close August 20, 1927.

Rebuttal testimony of Dubbs to close September 6, 1927.

Final hearing December 7, 1927, at 11 A. M.

H. I. Houston,
Examiner of Interferences.

278

3703 [Eighteen agreed suspensions of further proceedings were granted by the Patent Office, the first 15 in view of the pendency of other related interferences and the remaining 3 in view of pending negotiations for settlement.]

3746 Dubbs *vs.* Behimer } Interference No. 49,355.

State of New York } ss.
County of New York }

(Stamp) Mail Room Nov 7 1930 U. S. Patent Office.

AFFIDAVIT OF R. J. DEARBORN.

R. J. Dearborn, of mature age and a resident of Summit, in the County of Union and State of New Jersey, being duly sworn, deposes and says,

That he is the attorney of record for Behimer in the above entitled interference and is also the Patent Attorney of The Texas Company, assignee of the Behimer application involved therein;

That active negotiations are now in progress between the assignees of the Behimer application and the Dubbs patent involved in this interference, leading to a settlement between them of this and all other interference controversies relating to the cracking of oil;

That under the terms of the proposed settlement this interference and all other cracking interferences between said assignees are to be promptly settled either by agreement or by arbitration; and

That it is his belief that this interference can be definitely settled and disposed of in the Patent Office within a period of ninety days from the date of suspension (January 2, 1931) now set for this interference.

R. J. Dearborn.

Sworn to and subscribed before me this 6th day of November, 1930.

S. B. Gifford.
Notary Public, Kings County
Clerk's No. 608 Register's No. 1209
N. Y. Co. Clerk's No. 437 Register's No. 1G310
My Commission Expires March 30, 1931

3748 IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Division Mar 30 1931 U. S. Patent Office.

Dubbs
vs.
Behimer } Interference No. 49,355.

STIPULATION.

In the matter of the above entitled interference, it is hereby stipulated by and between counsel, the Commissioner of Patents consenting, that proceedings be postponed therein for a further period of ninety (90) days from April 2, 1931, the date now set.

This postponement is requested in view of an agreement that has now been signed by the parties in interest by virtue of which it is the intention of the parties to settle by arbitration all controversies existing between them and the extension is requested in order to enable the parties to settle any and all litigations that can be disposed of by arbitration.

Very respectfully,
Charles M. Thomas,
Counsel for Dubbs.
R. J. Dearborn,
Counsel for Behimer.

Washington, D. C.
March 30, 1931.

3756 IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Division Oct 2 1931 U. S. Patent Office.

Behimer
vs.
Dubbs
} Interference No. 49355.

Hon. Commissioner of Patents,

Sir:

It is respectfully requested that proceedings in this interference be suspended for a period of sixty (60) days, for the reasons set forth in the previous requests for suspension, which are now of record.

Practically all other controversies, including a large number of interferences, have been settled and negotiations are in progress for the settlement of this case. It appears that in all probabilities an early settlement and disposal of this interference without contest will occur.

Respectfully submitted,
Charles M. Thomas,
Attorney for Dubbs.

This is to certify that a copy of the foregoing request has this 2nd day of October, 1931, been forwarded by registered mail to Mr. R. J. Dearborn, 135 East 42nd St., New York, N. Y.

Charles M. Thomas,
Counsel for Dubbs.

Washington, D. C.,
Oct. 1, 1931.

3758 IN THE UNITED STATES PATENT OFFICE.

(Stamp) Docket Division Dec 2 1931 U. S. Patent Office.

Dubbs
vs.
Behimer } Interference No. 49,355.

DISCLAIMER.

Otto Behimer, whose application Serial No. 630,242, filed April 6, 1923, is involved in the above entitled interference, hereby disclaims all of the counts of the issue as quoted below, and withdraws from the interference.

"1. A process of converting relatively heavy into lighter hydrocarbons, consisting in passing a stream of oil through a zone where the oil is heated to a cracking temperature but without substantial vaporization, passed thence to and through a zone where vaporization takes place, removing the vapors, subjecting them to reflux condensation, returning reflux condensate for further cracking, removing the residue, after said vaporization, from the system without permitting intermingling of any substantial portion thereof with the oil in the heating zone and maintaining a pressure upon the material during distillation.

"2. A process of converting heavy into lighter hydrocarbons consisting in passing in an advancing direction a stream of oil through a zone where the oil is heated to the cracking temperature but substantial vaporization prevented and thence to and through a zone where vaporization takes place, removing the vapors and condensing them, returning a portion of the condensates to the heating zone for further treatment, removing the residue after said vaporization from the system without permitting contact or intermingling of any substantial portion thereof with the oil in the heating zone and maintaining a vapor pressure upon the material under treatment during distillation and condensation.

"3. A process of converting heavy into lighter hydrocarbons consisting in passing in an advancing direction a stream of oil through a heating zone where the oil is heated to a cracking temperature but substantial vapor-

ization prevented and thence to an enlarged chamber where vaporization takes place, removing the vapors from said chamber and condensing them and returning a portion of the condensation to the heating zone for further treatment, withdrawing substantially continuously the residue from said chamber and discharging the same entirely apart from the feed of oil to the heating zone and maintaining a vapor pressure upon the material under treatment during distillation and condensation.

333

3759 "4. A process of converting heavy into lighter hydrocarbons consisting in passing in an advancing direction a continuous stream of oil through a heating zone where the oil is heated to a cracking temperature but substantial vaporization prevented and thence to a chamber where vaporization takes place, discharging from the chamber substantially continuously a quantity of the residue proportional to the amount of oil supplied to the heating zone and said vaporization, condensing the vapors and returning a portion of the condensates to the stream of oil for re-treatment in the heating zone and maintaining a vapor pressure upon the material under treatment during distillation and condensation.

"5. A continuous process for cracking hydrocarbons consisting in passing the same in a stream in an advancing direction from an inlet point to a discharge point separated and entirely disassociated from the inlet point, subjecting the material in the first stage of its travel to a cracking temperature while preventing substantial vaporization, affording a vaporization space above the stream during the second stage of the travel thereof to said discharge point, taking off the vapors from said vapor space and subjecting them to a condensing action, discharging into the stream at a point remote from that where vaporization occurs a portion of the condensates and maintaining a vapor pressure on the material under treatment during distillation and condensation.

"6. A process of cracking oil consisting in continuously passing a stream of oil through a series of tubes seated in a crackling zone where the oil is heated to the cracking temperature but substantial vaporization prevented, and thence to an enlarged vapor chamber where vaporization takes place, removing the vapors from said chamber, subjecting them to an initial condenser where a portion of the

vapors are condensed, subjecting the uncondensed portion of the vapors to a final condensation, returning the condensate from said initial condensation to the inlet side of the cracking tubes and continuously drawing off the residue from the vapor chamber and preventing it from returning to the cracking zone and maintaining a pressure on the oil during treatment.

"7. A process of cracking oil consisting in progressively passing the oil through a heating zone where the oil is heated to the cracking temperature but substantial vaporization prevented and then passing the heated oil through a vaporizing zone, forcing the carbon containing residue out of the system and preventing it from coming in contact with the incoming charging stock taking off vapors from the vapor zone and condensing them and returning condensate therefrom to and mixing it with the fresh charging stock which is being passed through said zone.

334

3760 "8. The process for treating hydrocarbon oil by heating it to a cracking temperature and condensing the condensable products volatilized therefrom under pressure, consisting in raising the oil to a cracking temperature without substantial vaporization in a heating zone, passing the heated oil to a second zone where vaporization occurs, removing the vapors and subjecting them to condensation, subjecting a portion of the condensate to further cracking, taking off the carbon containing residuum from the second zone without permitting access of any substantial portion thereof to the heating zone and maintaining a pressure upon the materials under treatment, substantially as described."

Signed at Chicago, Illinois, this 26th day of Oct., 1931.

Otto Behimer.

Witness:
Lee J. Gary.

The Texas Company, assignee of the entire right, title and interest in and to the above indicated application of Otto Behimer, Serial No. 630,242, filed April 6, 1923, involved in the above entitled interference, hereby assents to the foregoing disclaimer.

The Texas Company,
By R. C. Holmes,
President.

Attest:
W. G. Elicker,
Assistant Secretary.

335

3761 AGP

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

Paper No. 132

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

(Stamp) Mailed Dec 5—1931.

Please find below a communication from the Examiner of Interference in this case.

Thomas E. Robertson,
Commissioner of Patents.

Dubbs
vs.
Behimer. } Interference No. 49355.

Proceedings are resumed and the following action taken.

A disclaimer of the invention covered by the subject matter in issue having been filed by Behimer, the senior party, and the same having been concurred in by the assignee, and otherwise found to comply with the requirements of Rule 125, priority of invention of the subject matter in issue is hereby awarded to Carbon P. Dubbs, the junior party.

The said instrument is construed as a waiver of the right of appeal, and no time for appeal is therefore set.

H. H. Jacobs,
Examiner of Interferences,
Room 255.

3762 [S (illegible)

Jun. 8, 1923. Declaration. Statements due Jul. 16, 1 (illegible).
Jun. 21/23. Registry return receipt.
Jun. 28, 23. Rev. and Power of Atty. by Assignee of Dubbs.
July 3/23. Notices of Revocation and Acceptance of Power of Atty.
July 3/23. Notice of change of attorney for Dubbs.
July 3/23. Stipulation to Extend time for Briefs.
July 3/23. Letter for Atty. for Dubbs.
July 7/23. Statements due Sept. 17/23.
Aug. 30/23. Stipulation to Extend Time for Statements.
Aug. 31/23. Statements due Oct. 16/23.
Oct. 8/23. Statement of Dubbs.
Oct. 8/23. Letter to Dubbs.
Oct. 15/23. Statement of Holmes et a (illegible).
Oct. 15/23. Letter to Holmes et a (illegible).
Oct. 19/23. Testy. set F. Hrg. May 6/ (illegible).
Oct. 23/23. Asso. Power of Atty.
Oct. 26/23. Permit to inspect (Barrett & Barrett).
Nov. 13/23. Stipulation to Extend Time for motions, etc.
Nov. 15/23. Times extended F. H. June 3/24.
Dec. 22/23. Stipulation to Extend Time for moti (illegible).
Dec. 22/23. Prelim. statement of Dubb (illegible).
Dec. 22/23. Motion by Dubbs to substitute (illegible).
Dec. 22/23. Motion by Dubbs to shift bur (illegible).
Dec. 28/23. Motion period ex. to Dec. 22 (illegible).
Jan. 2/24. Stipulation to Extend Time for hearing of (illegible).
Jan. 8/24. Hearing on Motions by Dubbs extended to (illegible).
Feb. 2/24. Stipulation to Extend Time for hearing on (illegible).
Feb. 14/24. Hearing on Motion extended to February (illegible).
Feb. 9/24. Memo. for Dubbs in support of motio (illegible).
Feb. 9/24. Memo. for Holmes, Manley & Behimer.

337

3769 DX 179.

390

DEPARTMENT OF COMMERCE

United States Patent Office

To all persons to whom these presents shall come, Greeting:

This Is To Certify that the annexed is a true copy from the records of this office of the File Wrapper and Contents, in the matter of

Interference Number 55,160

Dubbs *vs.* Behimer,

Subject Matter:—

Process for Making Gasoline.

In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this twentieth day of September, in the year of our Lord one thousand nine hundred and thirty-three, and of the Independence of the United States of America the one hundred and fifty-eighth.

Conway P. Coe,

(Seal) *Commissioner of Patents.*

Attest:

D. E. Wilson,

Chief of Division.

11—8626

U. S. Government Printing Office: 1933

3772 Paper #1

Div. 31 Room 312 CSD/NH Letter No.

Address only Jun 28 1927
"The Commissioner of Patents
Washington, D. C."

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

Examiner of Interferences:

An Interference is found to exist between the following cases, and in respect to the invention therein specified, to wit:

Cases

1. Name Carbon P. Dubbs
   Post office address 1221 Greenwood Avenue, Wilmette, Illinois
   Title Process of cracking hydrocarbon oils.
   Filed Jan. 31, 1924 Ser. No. 6060 Pat'd. ..... No. .....
   Division ~~or continuation~~ of App. No. 266,396, filed Dec. 12, 1918
   Attorney Frank L. Belknap, of 1st Natl. Bank Bldg., Chicago, Ill.
   Associate Att'y. Chas M. Thomas of 916 G. St., NW, Washington, D. C.
   Assignee Universal Oil Products Company of Chicago, Illinois, a corporation of South Dakota

2. Name Otto Behimer,
   Post office address c/o The Texas Comany, Port Arthur, Texas.
   Title Process for making gasoline.
   Filed Apr. 6, 1923 Serial No. 630242 Pat'd. ..... No. .....
   Division ~~or continuation~~ of App. No. 263,562, filed Nov. 21, 1918

Attorney R. J. Dearborn of 17 Battery Place, New York, N. Y.
Associate Atty. _____ of _____
Assignee The Texas Company of New York, N. Y., (17 Battery Place), a corporation of Delaware.

3. Name _____
Post office address _____
Title _____
Filed _____ Ser. No. _____ Pat'd. _____ No. _____
Division or continuation of _____
Attorney _____ of Intf. Number 55610
Associate Att'y. _____ of Intf. Declared Jul 15, 1927
Assignee _____ of Statements Due Aug 22 1927
Invention

Government Printing Office
55610—1

3773 Count 1.

A process of converting heavy into lighter hydrocarbons, consisting in passing a stream of hydrocarbon oil through a zone where said oil is heated to a cracking temperature, in passing the oil thence to and through an enlarged zone where conversion occurs, removing the vapors, subjecting them to reflux condensation, returning reflux condensate without permitting the same to intermingle with a bulk supply of charging stock under a mechanical pressure to the heating zone for further treatment, in preventing an intermingling of any residue from said enlarged conversion zone with the oil in the heating zone, and in maintaining a pressure on the material during conversion in said heating and conversion zones.

Count 2.

A process of converting heavy into lighter hydrocarbons, consisting in passing a stream of oil through a coil in a heating zone where said oil is heated to a cracking temperature, in transferring the highly heated oil to an enlarged zone where vaporization of a substantial portion thereof occurs, in passing the vapors to a dephlegmator, in introducing reflux condensate from said dehplegmator without permitting said condensate to intermingle with a

bulk supply of charging stock to pressure applying means to be forced under pressure through the coils in the heating zone, in removing residue from said conversion zone without permitting intermingling of any substantial portion thereof with the oil in the heating coil, and in maintaining a superatmospheric pressure on said oil undergoing conversion.

Count 3.

A process for converting heavy into lighter hydrocarbons, consisting in passing in an advancing direction a stream of oil in a coil through a heating zone where said oil is heated to a cracking temperature, in transferring the highly heated oil to an enlarged chamber where conversion thereof occurs, in passing generated vapors to a reflux condenser, in returning reflux condensate without being permitted to intermingle with a bulk supply of charging stock under a forced mechanical pressure to said heating coil, in preventing a return of residual oil from said conversion chamber to the heating coil, and in maintaining a superatmospheric pressure on the oil undergoing conversion in said system.

Count 4.

A process of converting relatively heavy into lighter hydrocarbons, consisting in passing a stream of oil through a coil in a heating zone where the oil is heated to a cracking temperature passing the oil thence to and through a zone where vaporization takes place, removing the vapors, subjecting them to reflux condensation, returning reflux condensate under a mechanical pressure to the heating zone for further cracking, removing the residue after said vaporization from the system without permitting intermingling of any substantial portion thereof with the oil in the

2

3774 heating zone, and maintaining a pressure on the material during conversion in said coil and chamber.

Count 5.

A process of converting heavy into lighter hydrocarbons, consisting in passing in an advancing direction a stream of oil in a coil through a heating zone where the oil is heated to a cracking temperature and thence to and through a zone where vaporization takes place, removing

the vapors and passing them through a refluxing condenser, in returning a portion of the reflux condensate free of residual oil under a mechanical pressure to said heating coil for further treatment therein, in removing residue from the system after said vaporization without permitting contact or intermingling with any substantial portion thereof with the oil in the heating zone, in maintaining a vapor pressure on the oil undergoing distillation and condensation in said system.

Count 6.

A process of converting heavy into lighter hydrocarbons, consisting in passing in an advancing direction a stream of oil in a coil through a zone where the oil is heated to a cracking temperature, and thence to and through a zone where vaporization takes place, removing the vapors and passing them through a reflux condenser, in forcing both reflux condensate from said condenser and charging stock under an applied mechanical pressure in a stream through the heating coil, in removing residue from the system after said vaporization without permitting contact or intermingling with any substantial portion thereof with the oil in the heating zone, in maintaining a vapor pressure on the oil undergoing distillation and condensation in said system.

Count 7.

A process of converting relatively heavy into lighter hydrocarbons, consisting in passing a stream of oil through a coil in a heating zone where said oil is heated to a cracking temperature, in passing the oil to an enlarged zone where conversion thereof occurs, in introducing generated vapors to a reflux condenser, in returning reflux condensate free of residual oil mixed with charging stock under a forced mechanical pressure to the inlet of said heating coil, in preventing the return of any liquid residual oil through said enlarged zone to the heating coil, and in maintaining a superatmospheric pressure on the oil undergoing conversion in said system.

Count 8.

A process of cracking oil, consisting in continuously passing a stream of oil through a series of tubes seated in a heating zone where said oil is heated to a cracking

temperature, in delivering the oil to an enlarged vapor chamber where vaporization takes place, in removing vapors from said chamber and subjecting them to an initial condenser where portions of the vapors are con-
3775 densed, in subjecting the uncondensed portion of the vapors to final condensation, returning the condensate from said initial condenser under an applied mechanical pressure to the inlet side of said heating tubes, in continuously drawing off residue from the vapor chamber and preventing it from returning to the heating tubes and in maintaining a pressure on the oil in said heating tubes, enlarged vapor chamber and initial condenser.

Count 9.

The continuous method of cracking hydrocarbon oils which comprises charging a stream of oil into a cracking still to maintain a body of oil therein, maintaining the oil therein under pressure and at a cracking temperature, removing the evolved vapors, separating out the heavier constituents thereof and cyclicly returning them to the still for further treatment by positively forcing them into the stream of charging oil being supplied to the still.

Count 10.

The process of oil conversion that comprises maintaining a body of oil in a still at a cracking temperature and pressure and under distillation, by continuously supplying oil thereto through a heating coil in which the oil is raised to a comparatively high cracking temperature in a single passage, separating out the heavier distillation products in the form of a hot condensate and forcing it while still hot into the coil for retreatment.

Count 11.

A process of oil conversion that comprises forcing a stream of oil under pressure once through an elongated heating zone of restricted cross-section, applying heat to the oil in transit therethrough to raise the oil to a cracking temperature, delivering the heated oil into an enlarged zone where a body of liquid oil is maintained under pressure and at a cracking temperature, removing the evolved vapors from said enlarged zone, separating out the heavier constituents thereof in the form of a hot condensate and returning said condensate while still hot for retreatment

by positively forcing it into the elongated heating zone against the back pressure developed therein.

Count 12.

The process of oil conversion that comprises maintaining a body of oil in a chamber at a cracking temperature by continuously charging fresh oil therein at a rapid rate through an elongated charging line of restricted cross-section, maintaining a cracking pressure upon the oil in the chamber whereby a higher back pressure is developed in the elongated charging line by reason of the frictional resistance of the charging stream flowing therethrough, removing the evolved vapors from the cracking chamber, separating out the heavier constituents under substantially the pressure of the chamber and cyclicly returning the separate condensate to the cracking chamber for retreatment by positively forcing in into the charging stream

4

3776 of fresh oil at a point in the charging line remote from the chamber and against the relatively high back pressure therein.

The relation of the counts of the interference to the claims of the respective parties is as follows:

Counts	Dubbs	Behimer
1	1	32
2	2	33
3	3	34
4	4	35
5	5	36
6	6	37
7	7	38
8	8	39
9	12	10
10	13	11
11	14	20
12	15	22

(Counts compared).

CSD

(sgd.) W. N. Holmes,
Examiner.

5

3777 55610-2

Statement of Dubbs
Filed Aug 5 1927
Examined Aug. 29 1927
Approved ..... 19....

IN THE UNITED STATES PATENT OFFICE

Carbon P. Dubbs
vs.
Otto Behimer. } Interference No. 55610.

Preliminary Statement of Carbon P. Dubbs.

County of Cook, State of Illinois: } ss:

Carbon P. Dubbs, of Chicago, in the County of Cook, and State of Illinois, being duly sworn, doth depose and say that he is a party to the interference declared by the Commissioner of Patents on July 15, 1927, between his application for Letters Patent filed December 12, 1918, Serial No. 6060, and an application of Otto Behimer for Improvements in a Process for Making Gasoline; that he conceived the invention set forth in the declaration of interference during the latter part of the month of July, 1916; that he made drawings of an apparatus for carrying out the process, and a description of the process, during the latter part of the month of July, 1916, and on the same date that he explained the invention to others; that he reduced the invention to practice during the latter part of the month of January 1917; that since that date he has continued to practice the process in a full sized apparatus at various times and at different places in the United States.

(Sgd.) Carbon P. Dubbs.

Sworn to and subscribed before me, a notary public, this 7th day of July, 1927.

(Sgd.) Paul J. Muller,
Notary Public.

(Seal)

My commission expires 3/27/28.

6

3778 55610-3

Statement of Behimer
Filed Aug 20 1927
Examined Aug 29 1927
Approved ..... 19....
R

IN THE UNITED STATES PATENT OFFICE

Carbon P. Dubbs
vs.
Otto Behimer.
} Interference No. 55,610.

Preliminary Statement of Otto Behimer.

Otto Behimer, being duly sworn deposes and says that he is a party to the interference declared by the Commissioner of Patents, July 15, 1927, between his application for letters patent for a Process for Making Gasoline, Serial No. 630,242 filed April 6, 1923 as a division of his application for a Process for Making Gasoline, Serial No. 263,562 filed November 21, 1918, and an application for patent filed by Carbon P. Dubbs; that he conceived the invention set forth in the declaration of interference, made sketches thereof and disclosed the same to others between Fbruary 25, 1916 and November 6, 1916; that the first working drawings thereof were made on or about November 6, 1916; that the first written description thereof was made on or about June 20, 1917; that he first reduced the invention to practice during the period from May 30th to June 1st, 1917; that the invention has been practiced

7

3779 extensively on a commercial scale since that time, and that no applications for letters patent on the invention have been filed by him in any foreign country before the filing date of the parent application for letters patent of the United States.

State of Texas,
County of Jefferson. } ss:

(Sgd.) Otto Behimer.

Sworn to and subscribed before me this 12th day of August 1927.

(Seal)

(Sgd.) Eunice M. Rogers,
Notary Public in and for Jefferson County, Texas.

3780 AGP Paper No. 4

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

Please find below a communication from the Examiner of Interferences in this case.

Thomas E. Robertson,
Commissioner of Patents.
Patent Office
Aug 29 1927
Mailed

O. Behimer,
c/o R. J. Dearborn,
New York, N. Y.

Behimer
vs.
Dubbs. } Interference No. 55610.

The allegations for conception, the making of sketches, and disclosure in the preliminary statement of Behimer are too indefinite for the purposes of this interference.

An amended statement overcoming these defects should be filed on or before September 26, 1927.

For failure to so file Behimr will be restricted to November 6, 1916 for conception, the making of sketches, and disclosure of the invention in issue.

(Sgd.) H. I. Houston,
Examiner of Interferences.

9

3781 AGP Paper No. 5

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

DEPARTMENT OF COMMERCE

United States Patent Office

Washington,

Please find below a communication from the Examiner of Interference in this case.

Thomas E. Robertson,
Commissioner of Patents.

Patent Office
Aug 29 1927
Mailed

Behimer
vs.
Dubbs
} Interference No. 55610.

C. P. Dubbs
c/o C. M. Thomas,
City.

The office having found it necessary to criticise the preliminary statement of Behimer, the time for filing statements in this case is extended to September 26, 1927, to permit him to filed an amended statement.

(Sgd.) H. I. Houston,
Examiner of Interferences.

10

3783 (Paper No. 12, Stipulation, Dec. 27, 1927)

It is hereby stipulated by and between Counsel for the respective parties hereto, the Commissioner of Patents consenting, that the time for filing the amended preliminary statement of Behimer be extended for thirty days from Dec. 27, 1927, the time now set.

A verified showing substantiating the necessity for

further extension is filed herewith, in accordance with the requirement of a communication of the Examiner of Interferences dated Nov. 28, 1927.

R. J. Dearborn,
Attorney for Behimer.
Chas. M. Thomas,
Attorney for Dubbs.

New York, Dec. 22, 1927.

3784 Affidavit.

R. J. Dearborn, of mature age, being duly sworn, deposes and says that he is the patent attorney for The Texas Company of Delaware, and the attorney of record for Otto Behimer in his application Serial No. 630,242, filed April 6, 1923, as a division of his parent application, Serial No. 263,562, filed November 21, 1918, which first-named application is involved in the instant interference, and the entire right, title and interest in both of which applications is assigned to The Texas Company of Delaware.

That the said Otto Behimer severed his employment with The Texas Company during the month of August this year;

That in the early part of October of this year I personally placed in the hands of the said Otto Behimer an amended preliminary statement in this interference,
3785 discussing the matter with the said Otto Behimer and request his execution thereof;

That since that time he has communicated on several occasions with the said Otto Behimer or his personal attorney, in an effort to secure the execution of said amended preliminary statement;

That he last wrote to the said Otto Behimer on Dec. 14, 1927 explaining the necessity of filing said amended preliminary statement before Dec. 27th and again requesting its execution; and

Deponent further says that up to the present time he has not yet received the executed amended preliminary statement from the said Otto Behimer and, therefore, in order to preserve the rights of the Texas Company requests a further extension in the time for filing said amended preliminary statement.

R. J. Dearborn

Sworn to and subscribed before me this 22nd day of December, 1927.

Edwin G. Jones,
Notary Public.

3786 (Paper No. 14, STIPULATION, Jan. 23, 1928.)

LETTER.

In this interference, it has been necessary to secure several extensions in the time for filing an amended preliminary statement of Behimer, and in accordance with the requirement of the Patent Office in a communication dated Nov. 28, 1927, a verified showing accompanying the last stipulation dated Dec. 22, 1927, was filed. Since that time we have not received the amended preliminary statement from Mr. Behimer and the situation, therefore, remains as set forth in the affidavit. For this reason it is respectfully requested that a further extension of thirty days be granted in view of the accompanying stipulation.

R. J. Dearborn,
Attorney for Behimer.

3787 (Paper No. 15, OFFICE LETTER, Jan. 25, 1928.)

The stipulation filed Jan. 23, 1928 is approved and in accordance with the provisions thereof, the time within which Behimer may file an amended statement is hereby extended to Feb. 27, 1928.

No further extensions will be granted the party Behimer for the filing of an amended statement.

H. P. Houston,
Examiner of Interferences.

3788 (Paper No. 16, AMENDED PREL. STATE. of Behimer, Feb. 23, 1928.)

W. W. Bruce, of New York, County of New York and State of New York, Vice President of The Texas Company, a corporation organized and existing under the laws of the State of Delaware, being duly sworn, deposes and says that he is informed, believes and avers.

That Otto Behimer, of Chicago, County of Cook and State of Illinois, is a party to the interference declared by the Commissioner of Patents, July 15, 1927, between his application for Letters Patent for a Process of Making Gasoline, Serial No. 630,242, filed April 6, 1923, as a division of his application for a Process of Making Gasoline, Serial No. 263,562, filed Nov. 21, 1918, and an appli-

cation for Letters Patent for Process of Cracking Hydrocarbon Oils, filed by Carbon P. Dubbs and assigned to the Universal Oil Products Company of Chicago, Ills.

3789 That The Texas Company is the sole and exclusive owner of the aforesaid patent applications, Serial No. 630,242 and Serial No. 263,562, by reason of an assignment of the entire right, title and interest therein, which was duly recorded in the Patent Office (Liber R-130, page 4) on May 19, 1927;

That the said Otto Behimer severed his employment with The Texas Company during the month of August, 1927, and is now associated with the Universal Oil Products Company of Chicago, Illinois, the assignee of the Dubbs application involved in this interference;

That in September, 1927, an amended preliminary statement was prepared from the information supplied by the said Otto Behimer prior to his leaving The Texas Company, and during the early part of October, 1927, this amended preliminary statement was handed to the said Otto Behimer, with the request that he execute the same. This he declained to do, and although the said Otto Behimer has since been communicated with on several occasions, as appears in an affidavit of record, in this interference, dated Dec. 22, 1927, by R. J. Dearborn, Patent Attorney for the said Otto Behimer in this interference and also Patent Attorney for The Texas Company, up to the present time The Texas Company has not yet received the executed amended preliminary statement from the said Otto Behimer;

That in view of the circumstances recited above, the deponent makes the following allegations for and 3790 in behalf of said Otto Behimer;

That said Otto Behimer conceived the invention set forth in the declaration of interference between Feb. 25, 1916 and July 29, 1916;

That he disclosed it to others on or about July 29, 1916;

That sketches illustrative of the invention were made in October, 1916, and the first working drawings thereof were made on or about November 6, 1916;

That the first written description was made on or about June 20, 1917;

That he first reduced the invention to practice during the period from May 20th to June 1, 1917;

That the invention has been practiced extensively on a commercial basis since that time, and

That no application for letters patent on the invention has been filed by him or his attorney in any foreign country before the filing date of the parent application for letters patent of the United States.

W. W. Bruce,
Vice President, The Texas Company.

Sworn to and subscribed before me this 21st day of February, 1928.

W. G. McConkey,
Notary Public.

3791 (Paper No. 17, OFFICE LETTER, Mar. 7, 1928.)

It is found that the allegations of conception and disclosure in the preliminary statement of Dubbs are too indefinite for the purposes of this interference.

An amended statement overcoming this defect should be filed on or before Mar. 19, 1928.

For failure to so file Dubbs will be restricted to July 31, 1916, for conception and disclosure of the invention in issue.

H. P. Houston,
Examiner of Interferences.

(Paper No. 18, OFFICE LETTER, Mar. 7, 1928.)

The allegations of conception in the preliminary statement filed in behalf of Behimer is still too indefinite for the purpose of this interference.

An amended statement overcoming this defect should be filed on or before Mar. 19, 1928.

For failure to so file Behimer will be restricted to July 29, 1916, for conception of the invention in issue.

H. P. Houston,
Examiner of Interferences.

3792 (Paper No. 21, AMENDED STATEMENT OF DUBBS, Apr. 14, 1928.)

County of Cook } ss.
State of Illinois }

Carbon P. Dubbs, of Chicago, in the County of Cook and State of Illinois, being duly sworn, doth depose and say that he is a party to the interference declared by the Commissioner of Patents on July 15, 1927, between his application for Letters Patent filed Dec. 12, 1918, Serial No. 6060 and an application of Otto Behimer for improvements in a Process for Making Gasoline that he conceived the invention set forth in the declaration of interference on or about the 18th day of July 1916; that he made drawings of an apparatus for carrying out the process and a written description of the process on or about the same day and on the same date that he explained the invention to others; that he reduced the invention to practice during the latter part of the month of January, 1917; that since that date he has continued to practice the process in a full sized apparatus at various times and at different places in the United States.

Carbon P. Dubbs.

Subscribed and sworn to before me this 12th day of April, 1928.

Mary L. Egeler,
Notary Public.

3793 (Paper No. 22, OFFICE LETTER, Apr. 27, 1928.)

The preliminary statements of the parties are approved and times for taking testimony and for final hearing will be set when a companion case is in condition for such action. The time within which motions may be filed is set to expire May 28, 1928. When testimony is set Behimer will be restricted to July 29, 1916 for conception of the invention in issue.

The dates of filing and serial numbers of the respective applications are as follows:

Carbon P. Dubbs, filed Jan. 31, 1925, Ser. No. 6060, Division of Ser. No. 266,396, filed Dec. 12, 1918;
Otto Behimer, filed Apr. 6, 1923, Ser. No. 630,242, Division of Ser. No. 263,562, filed Nov. 21, 1918.

H. P. Houston,
Examiner of Interferences.

3803 (Paper No. 25, MOTION TO DISSOLVE BY DUBBS, May 28, 1928.)

Now comes the party Dubbs and moves to dissolve the above entitled interference as to all the counts thereof on the following grounds:

1. That the Behimer application will not support any of the counts of the interference.

2. That the Behimer application discloses an inoperative process and apparatus.

In support of ground I of the motion, it is urged that Behimer cannot make counts 1 to 8 inclusive, all of which arose in the Dubbs application for the reason that his application does not show an oil cracking process including the step of returning reflux condensate free of residual oil under a forced mechanical pressure to the inlet of the heating coil.

The term mechanical pressure, as required by the counts and as defined by the party Dubbs, embodies a pump or similar mechanical pressure element for forcing the reflux to the inlet of the coil by the application of mechanical force thereto.

It is further urged that Behimer has no right to make counts 9 to 12 inclusive for the reason that he does not
3804 disclose a positive or forced feed for the reflux introduced to the inlet of the heating coil.

The Behimer application discloses only a feed line 17 for the reflux condensate communicating through the agency of a jet 7a with the heating coil. This feed line and jet, though inoperative, would, if operative, represent only a gravity feed of reflux to the inlet of the coil and not a positive, forced or mechanical feed for injecting the reflux into the heating coil under a forced applied pressure, as required by all of the counts.

In support of Ground 2 of the motion, it is urged that Behimer has no right to make any of the counts of the interference for the further reason that his application discloses an inoperative process. The jet 7a of the Behimer application is inoperative for returning reflux condensate to a heating coil in an oil cracking system.

The presence of this jet in the Behimer application makes the process fully inoperative because of the inability of the jet to return reflux to the heating coil in a cracking system which operates under variable conditions of friction, pressure, temperature, imposed pressure, and hydro-

static head of the reflux. The presence of this jet, the only means shown for returning the reflux, not only fails to perform this function, but it destroys any and all possibility of an operative return of the reflux to the inlet of the coil.

3805 In the Dubbs application a positively acting pump is shown which is operable at all times to return to the heating coil the required quantities of reflux condensate to insure a uniform and successful operation of the process therein disclosed.

Respectfully submitted,

Chas. M. Thomas,
Attorney for Dubbs.

(Affidavit of Service Attached.)

3822 (Paper No. 28, BRIEF FOR DUBBS, Oct. 1, 1928.)

The Dubbs motion for dissolution presents the following grounds:

1. That the Behimer application will not support the counts of the interference because it fails to disclose the step of forcing the reflux condensate through the heating coil under an applied mechanical pressure, which is the characteristic and essential feature of each count; and

2. That the jet found in the feed line of the Behimer apparatus is inoperative for feeding reflux condensate to the heating coil.

As representative of the counts, we quote below the following:

7. A process of converting relatively heavy into lighter hydrocarbons, consisting in passing a stream of oil through a coil in a heating zone where said oil is heated to a cracking temperature, in passing the oil
3823 to an enlarged zone where conversion thereof occurs, in introducing generated vapors to a reflux condensate, in returning reflux condensate free of residual oil mixed with charging stock under a forced mechanical pressure to the inlet of said heating coil, in preventing the return of any liquid residual oil from said enlarged zone to the heating coil, and in maintaining a super-atmospheric pressure on the oil undergoing conversion in said system.

8. A process of cracking oil, consisting in contin-

uously passing a stream of oil through a series of tubes seated in a heating zone where said oil is heated to a cracking temperature, in delivering the oil to an enlarged vapor chamber where vaporization takes place, in removing vapors from said chamber and subjecting them to an initial condenser where portions of the vapors are condensed, in subjecting the uncondensed portion of the vapors to final condensation, returning the condensate from said initial condenser under an applied mechanical pressure to the inlet side of said heating tubes, in continuously drawing off residue from the vapor chamber and preventing it from returning to the heating tubes and in maintaining a pressure on the oil in said heating tubes, enlarged vapor chamber and initial condenser.

Ground 1 of the Motion to Dissolve.

The counts define an oil conversion process of the clean circulation type in which a stream of oil advances through a heating tube to be heated to a cracking temperature and is then delivered to an enlarged zone where vaporization of the heated oil occurs. From the enlarged zone unvaporized residue is discharged from the system while the generated vapors are subjected to reflux condensation, the system being maintained under a uniform pressure. The reflux condensate is returned to the heating coil under mechanical pressure applied thereto sufficient for
3824 overcoming the frictional resistance opposed to the passage of the oil through the heating tubes where it is subjected to a cracking temperature.

The counts do not cover a clean circulation process of this type broadly, since generic claims, as well as claims limited to one specific mode of operation are found in the issued Dubbs patent 1,392,629, issued Oct. 4, 1921, on an application filed Mar. 19, 1919, which is now in interference with the present application of Behimer upon a different issue from that of the present interference.

The characteristic feature of the counts of this interference, is the step of returning the reflux condensate to the heater under a mechanical pressure.

Counts 1 to 8 of the interference originated in Dubbs application Ser. No. 266,396, filed Dec. 12, 1918. In this application the raw charging oil is forced by the usual charging pump (not shown) through the line 10 into the

heating tubes 6. Here the oil receives its cracking heat. From the heating tubes 6 it passes into the larger vapor tubes 7, where the vapor releases itself from the oil. The large tubes are only partly filled by the oil. An adequate vapor separating surface is thus presented and above this surface an adequate vapor releasing space provided. The flow of the oil is slowed down in the tubes 7 thereby providing the time factor necessary for effecting the desired conversion.

Vapors generated in the tubes 7 pass out through the risers 15 and into the aerials 18, 19, 22 and 23. From these aerials, or vapor lines, the vapors pass on into a stabilizing tank 24 and the uncondensed vapor ascends
3825 through the aerial condenser 23. All of the reflux condensate produced in the lines 18, 19, 22 and 23 and in the aerial condenser 26 is collected in the tank 24.

As shown in Fig. 2ª, by closing the valves 46 and 47, and opening the valve 48, the reflux condensate under a hydrostatic head pressure flows into the coil 6 meeting at the entrance of the coil the stream of raw oil being continuously supplied to the coil through the line 10. The reflux enters the coil through the line 41 (Fig. 2). The two streams of oil merge and pass through the heating coil. The hydrostatic head pressure due to the elevation of the tank 22 is sufficient to cause the reflux to enter the heating coil. Such an operation is claimed both broadly and specifically in the Dubbs patent 1,392,629, Oct. 4, 1921, as will be later pointed out.

It is upon an alternative operation embodying the use of the pump 43 (Fig. 2ª) by means of which the reflux condensate from the tank 24 is by mechanical force injected into the heating coil that the counts of this interference depend for their novelty and it is to such an operation that the counts are specifically limited. By opening the valves 46 and 44 (Figs. 1ª and 2ª) and closing the valve 48, the reflux condensate enters the pump. The reciprocating piston in the pump imposes upon this reflux a mechanical pressure. Consequently the reflux is forced from the pump and enters the heating coil 6 through the line 41 under an imposed mechanical pressure. In other words, in this operation the reflux is acted upon by a movable power driven mechanical element which by pressure thereon forces
3826 it through the coil. It is this feature of utilizing mechanical, in contradistinction from some other sort

of pressure as the hydrostatic head pressure specifically claimed in patent 1,392,629 that gives vitality to the counts of the interference. This is made manifest by the decision of the Board of Examiner-in-Chief in allowing claims corresponding to the counts and in distinguishing them from the matter claimed in the Dubbs patent 1392629. The Primary Examiner was of the view that claims corresponding to counts 1 to 8 were unpatentable over the Dubbs patent because a double patenting situation would be presented. This view was held to be erroneous on appeal and the Examiner's decision reversed.

To fully understand the meaning placed upon the counts by the Board, a brief consideration of the Dubbs patent is necessary.

In the Dubbs patent, as in the present application, the oil passes through heating tubes B in the furnace A, where it is heated to a cracking temperature and then passes on into the larger tubes C corresponding to the tubes 7 before described. From the tubes C the vapor passes through the risers D into a series of aerial condenser lines E which substantially correspond to the condenser lines 18, 19, 22 and 23 of the Dubbs application at bar. The uncondensed vapors from these lines pass on to an aerial condenser G' and by line G2 to a final condenser G3. All reflux from condenser G' and from lines E, flows down through
3827 the line F and is introduced by either one of two ways to the heating coil B as follows:

(1) Valve H5 (Fig. 2) having been opened and valve H6 (Fig. 2) closed, the reflux passes through line F' under a hydrostatic head to the pipe J' through which the stream of charging oil is forced to the furnace by the mechanical pump J. In this operation the hydrostatic head of the reflux leading from the elevated condenser lines and the pump J are used for forcing the charging stock and reflux through the system.

(2) Valve H5 having been closed and valve H6 open, the reflux from line F discharges into tank I and from thence passes to the suction side of the pump J where it meets the fresh charge and the two are, by the pressure of the piston of this pump, forced through the system. In this operation the reflux is subjected to an applied mechanical pressure.

The Dubbs patent 1,392,629 contains claims that are generic to the two operations. Claims 4 and 5 are specific to the first method wherein the reflux is introduced to the coil under a hydrostatic head pressure. These claims call for the step of returning the condensate to the stream of oil advancing through the heating coil. It is apparent that fresh charging stock is forced through the line J' to the heating coil and reflux is introduced through the line F' under a hydrostatic head.

In contradistinction the counts of the present interference are all specifically limited to a mechanical pressure return which is disclosed in the Dubbs patent but is not claimed therein.

The reflux is subjected to mechanical pressure in the Dubbs application by the pump 43.

3828 The Board has held that the return of the reflux under a mechanical pressure is patentable over an operation in which the reflux is returned by gravity or hydrostatic pressure. The Board in its decision on the Dubbs appeal stated:

> "A consideration of the claims of the patent shows that all of them, with the possible exception of 4 and 5 are generic to both methods of returning the condensate. Claims 4 and 5 call for the step of returning the condensate to the stream of oil. It is argued that the claims are limited to the gravity feed since it is only in that method that the condensate is returned to the stream of oil. In the pressure feed method the condensate is passed through the same pipe with a stream of oil, but it is questioned if it can be said that it is delivered to said stream. In any event, no claim of the patent is specifically limited to the mechanical pressure return.
>
> "The appealed claims are all limited to the idea of the use of mechanical pressure for returning the condensate. They are therefore directed to a species of the invention which is distinct from the gravity feed. Being thus limited and none of the claims of the patent being similarly limited, there is not a technical case of double patenting. The only question it seems is whether the mechanical pressure feed is inventive over the gravity feed."

The Board following this statement pointed out the many advantages of the mechanical pressure feed in the

last paragraph of page 3 of its decision, ending with line 13 of page 4, and concluded that the mechanical pressure feed did involve invention over the hydrostatic pressure or gravity feed. The Board stated its conclusion as follows:

"We find, therefore, that the invention now claimed is for divisible subject matter from that claimed in the patent, and that invention is involved over the gravity feed system."

3829 The foregoing decision of the Board clearly defines the scope of counts 1 to 8 of the interference. It further emphasizes that the only feature of novelty embodied in the counts is the step of returning the reflux condensate to the heating zone under a mechanical pressure, as distinguished from a gravity or head pressure feed.

The counts must not be constructed in such a way that they will be emasculated of the feature which the Board found vitalizes them.—*Lindley* v. *Shepard,* 24 Fed. (2nd) 606.

The Behimer application wholly lacks this characteristic and novelty feature of the counts. In the Behimer apparatus the reflux condensate from the aerial condenser 15 is returned to the heating coil 1 my means of a jet 7ª. This jet we assert is a wholly inoperative instrumentality for this purpose.

Assuming, arguendo, that a jet would be operative in the described combination for taking care of the reflux and returning it with the fresh charging stock for heating in the coil, as proposed in the Behimer application, it is contended that a set-up such as is illustrated and described by Behimer does not respond to counts 1 to 8, since there is lacking in such set-up the feature of "* * * returning reflux condensate * * * under a mechanical pressure," as specifically recited in count 1 and in substance in the remaining counts.

As will be recalled, it is this feature of returning the reflux under mechanical pressure which the Board held to be the vitalizing factor, as compared with that con-

3830 struction of the Dubbs patent 1,392,629, wherein the reflux is by gravity, or its hydrostatic head, introduced into the charging stock line, through which the charging stock is being forced by a power-operated mechanical pump.

In order that the construction and operation of an efficient form of liquid jet may be understood and discussed,

FIG. 1.

FIG. 2.

Witness

Inventors

by Parker, Burman, Watson & Bill
Attorneys

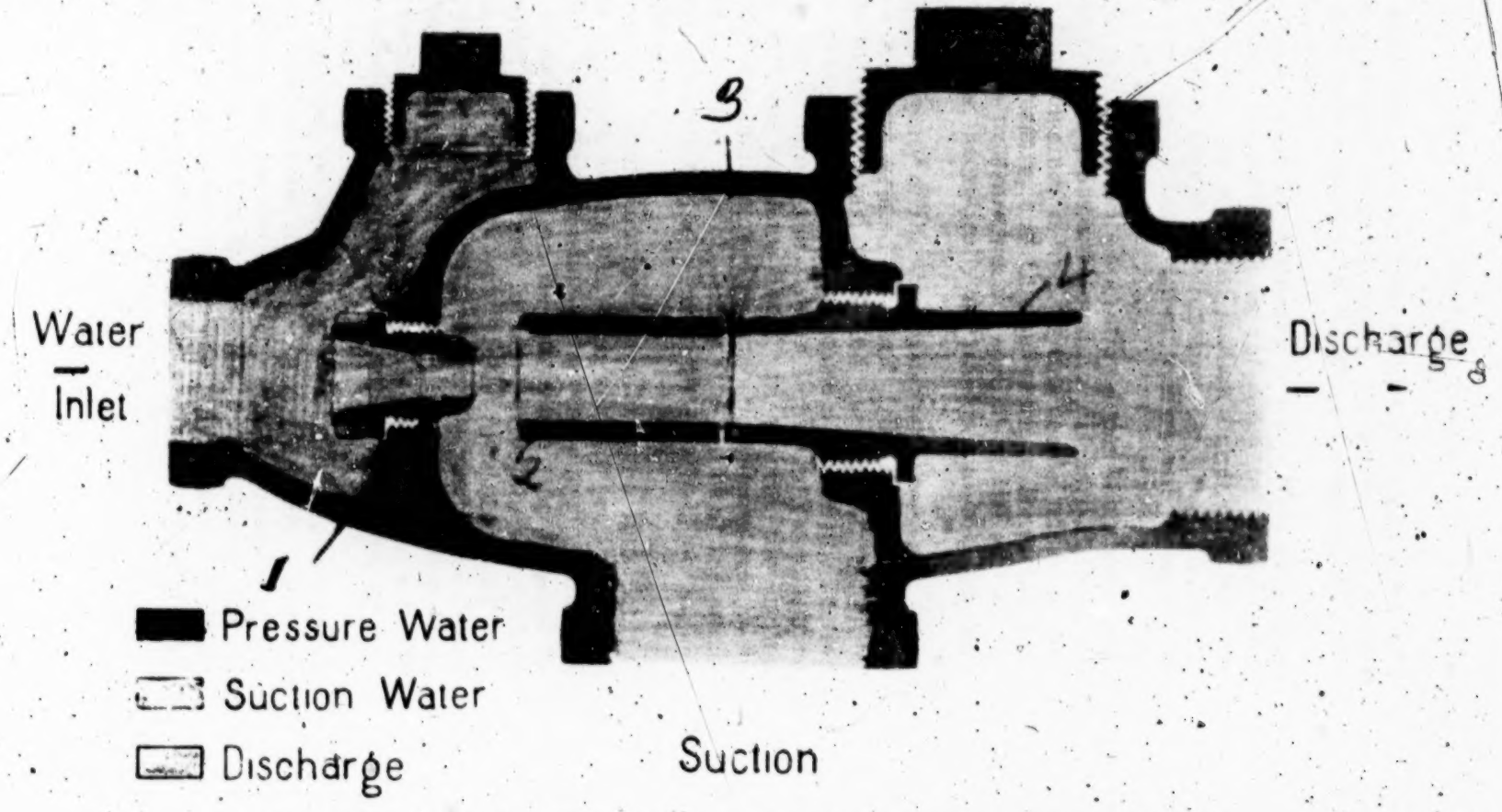


FIG. 218 B. 6 WATER JET EDUCTOR WITH SCREWED ENDS.

we are attaching hereto a blue print showing in cross section the standard form of liquid jet which is marketed by the well known Schutte & Koerting Company, of Philadelphia, Penna.

As is understood by engineers, a jet of this sort must be accurately proportioned in reference to the so-called pressure liquid, the so-called suction liquid, and the discharge, in order that it may function. Any material variation in any one of these three factors will destroy the operation of the jet.

Any jet machine for its operation depends entirely upon the velocity of the pressure medium discharged from the nozzle. This medium is fed to the nozzle under a predetermined pressure, and this pressure is converted into velocity in the pressure nozzle, so that at the exit of the nozzle there is theoretically no pressure at all, but only velocity.

The high velocity of the stream causes a region of lower pressure to exist around the exit from the nozzle and entrance to the Venturi tube, and usually this condition of lower pressure is utilized to cause a flow in the suction pipe, or for bringing the suction liquid into cooperative relation with the pressure liquid. In general, the suction liquid is actually moved by atmospheric pressure, when 3833 the pressure, as aforesaid, at the outlet of the nozzle and entrance to the Venturi tube falls below atmospheric pressure.

The suction liquid having been brought into contact with the pressure liquid, the high velocity jet formed by the latter, then due to some extent to entrainment, and mainly to skin friction on the surface of the jet, and to some extent to impact, and to some extent to a condition of lower pressure, the velocity of the pressure liquid carries forward the suction liquid, and the two enter the throat or discharge nozzle, at a mean velocity, and the proportion of the two media have to be such that the resultant velocity will be sufficient to overcome the counterpressure, or discharge head.

In the tapered, or expanding, section of the discharge nozzle, or Venturi tube, the velocity is gradually converted into pressure, but theoretically there is no pressure in the straight section of the throat, but only velocity. Were a pressure gauge connected to the point marked "3" on the attached blue print, it would register practically no pressure.

In this print the discharge nozzle of the pressure liquid is marked "1," the entrance to the throat, or discharge nozzle is marked "2," the throat is marked "3," and the tapered or expanding, section of the nozzle "4."

A jet machine is obviously not a mechanical pump, nor is the suction liquid—corresponding to the reflux in the base at bar—where such a jet is utilized for effecting its movement, moved by mechanical pressure.

3834 The term "mechanical pressure" clearly connotes a pressure which is due to the movement of a mechanical part operated by power, such as the pump piston disclosed in the application at bar for effecting the movement of the reflux, and in the Dubbs patent aforesaid, into the suction side of which pump both the reflux and the charging stock are introduced.

As stated, in a jet machine there is no moving part which exerts pressure on the suction liquid. The movement of this liquid is due solely to the velocity imparted by the jet construction to a cooperating body of liquid.

It is perfectly clear that the Board so understood the terms of the counts, since it held that they were not responded to by a construction in which there is a mechanical pump for moving the fresh charge under high pressure, and in which the reflux enters this stream under a hydrostatic, or gravity, pressure.

In the Behimer application disclosure there is the identical arrangement, modified only by the introduction at the point of intersection of the reflux with the charging stock of a jet machine, which serves to impart movement over and above that which it would receive from its hydrostatic head. This is due to the construction of the jet machine, which serves to convert the pressure on the charging stock stream into velocity, and it is this velocity which is used for moving the reflux stream.

There is nothing in this jet machine for applying a mechanical pressure to the reflux, and consequently the counts, which must be interpreted in the light of
3835 the Dubbs application, and the proceeding leading to the grant of the claims corresponding to such counts, cannot be read upon the Behimer disclosure.—*Lindley* v. *Shepard*, 24 Fed. (2d) 606.

Moreover the Board has found that the step of injecting condensate into the coil by the applied or forced mechanical pressure is the characteristic and inventive feature of the Dubbs claims. It is this step that distinguishes

the Dubbs claims from operations as described in the Behimer application. Such a step which vitalizes the patentable advance in the art Dubbs has made cannot be disregarded. In *House* v. *Merrell*, 261 O. G. 956, the Court of Appeals held:

> "These claims having originated with House, they must be given an interpretation, if possible, that will vitalize the disclosure in his specification; in other words an interpretation consistent with and protecting that disclosure."

In *Engler* v. *Sinclair*, 152 O. G. 489, the Court of Appeals held:

> "Manifestly what has gone before must be considered in determining the scope and meaning of the counts of this interference. Appellees are not here entitled to an interpretation which the patent standing alone would not sustain."

Counts 9 to 11.

These counts arose in the Behimer application. In counts 9, 11 and 12, the reflux condensate is defined as being positively forced into the stream of charging oil supplied to the still, while in count 10, the reflux condensate is defined as being forced, while hot, into the heating coil for retreament.

3836 Unquestionably, the Examiner construed the terms "positively forced" and "forced" as meaning the application of a mechanical pressure to the reflux condensate, otherwise such counts would not be included in this interference. For reasons hereinbefore stated, the Behimer application fails to disclose any means for positively forcing the reflux condensate into the stream of oil. In the disclosed set-up the reflux would be brought into contact with the charging stream by hydrostatic pressure and to this extent it would be moved into the stream and carried with it. This would not be due to a positive force applied thereupon but to the velocity of the charging stream caused by the construction, contour, shape and proportion of the absolutely immovable parts of the jet machine which would make them unpatentable to Dubbs in his application involved in this interference. If so construed, their allowability to Behimer should be withheld pending a decision in interference No. 49,355 where a series of similar generic counts are involved. If

Behimer prevails in that interference his right to counts 9 to 12 should then be considered; likewise if Dubbs prevails in such controversy, then, and at that time, the disposition of such counts should be considered.

We submit that the jet is inoperative for returning the reflux to the heating coil in any way.

It is clearly, however, an inoperative instrumentality for returning the reflux condensate to the coil under a forced mechanical pressure, since in its operation a jet will not, for reasons that have hereinbefore been stated, apply to the reflux condensate a mechanical pressure.

3837 If a jet will not so function, Behimer, of course, may not at this date delete the jet from his apparatus and substitute therefor a pump, or another operative instrumentality.

Neither can the Patent Office properly hold that a claim calling for the return of the reflux under mechanical pressure would find a proper support in the Behimer set-up notwithstanding the jet described may be wholly inoperative and chimerical for the purpose intended, upon the theory that one skilled in the art would know that the jet would not work and would substitute for it a mechanical pump.

Any such holding would be tantamount to a finding that greater favor should be shown an inventor who does nothing more than file a mere application for patent shown an inoperative thing, than would be shown to another inventor who before filing his application, at great labor and expense, constructed the same thing shown in the application. In the latter case the inoperative machine could not be considered a reduction to practice. In the former case, on the theory suggested, the inoperative mere paper disclosure would be considered a constructive reduction to practice.

And yet the courts have said that the better procedure is for the inventor to actually reduce his invention to practice before filing his application.

For these considerations, it is submitted that the only question here on this branch of the motion to dissolve is whether a jet machine is an operative instru-

3838 mentality, as shown in the Behimer application, for use in returning reflux in an oil cracking set-up. It is submitted that if your Honor finds it is not, he must find that Behimer is not entitled to make the claims.

It is not a proper instrumentality for the reason that

a jet machine is only operative under fixed conditions of pressure liquid, suction liquid and discharge head. A machine designed and proportioned for one set of fixed condition is not usable under another set of fixed conditions. It is not usable where these conditions vary. In a cracking set-up the conditions of suction liquid—reflux—and discharge head—friction in the heating tubes—are constantly varying.

The amount of reflux which is made is constantly varying, due not only to changes in atmospheric conditions, which affect the temperature conditions in the dephlegmator, but due to the amount and character of the reflux, which is constantly varying through a run.

The head pressure conditions vary, since, as the temperature of the oil varies, its volume correspondingly varies, and as its volume varies, the friction in the heating tubes also correspondingly varies.

For these reasons, even the most efficient form of jet machine would be entirely unsuitable for use in an oil cracking system for returning the reflux.

3839 Behimer's Motion to Dissolve.

Ground 1 of the Behimer motion asserts that certain counts cannot be made by Dubbs because his application fails to disclose that the oil is "heated to a cracking temperature" in its passage through the heating coil 6.

Ground 2 urges that a majority of the counts cannot be made by Dubbs because his application, as originally filed, fails to disclose beyond the heating coil 6 "an enlarged zone where conversion occurs".

Ground 4 of the Behimer motion contends that the counts are unpatentable to Dubbs, because of his failure to describe the invention with the clearness, fullness and exactness required by the statute.

All of the foregoing grounds for dissolution are urged against counts 1 to 8 of the interference, each of which arose in the Dubbs application and were allowed by the Board of Examiners-in-Chief.

The motion as to the foregoing grounds is a repetition of a motion brought by Behimer in Interference No. 52,305, counts 10 to 15 of which arose in the Dubbs application Serial No. 266,396, involved in this controversy. In Interference No. 52,305, Behimer filed a twenty nine page motion for dissolution, grounds 9 and 11 of this mo-

tion corresponding identically with grounds 1 and 2 of the present motion. Ground 9 of the motion in Interference No. 52,305 urged that the Dubbs application here involved did not show heating of the oil in a coil to a
3840 cracking temperature; while Ground 11 of the motion urged that this Dubbs application failed to disclose beyond the heating coil an enlarged zone where conversion occurs.

Moreover, in the motion filed in Interference 52,305, Grounds 10 and 12 thereof correspond to Ground 4 of the present motion, since both attack the disclosure of the Dubbs application as failing to describe the invention with the degree of clearness required by the statute.

Consequently, there is nothing new presented in the Behimer motion for dissolution in Grounds 1, 2 and 4. The application attacked in this interference is the precise application that was attacked in Interference 52,305, and the attack there centered on the same alleged insufficiencies in the disclosure as are presented in the present motion. In Interference 52,305 Behimer supported his motion by a lengthy oral argument and a voluminous brief of some fifty seven pages. The motion was given careful attention by the Law Examiner in view of the elaborate argument by Behimer, but the Law Examiner found no difficulty in finding that the contentions of Behimer were unsound. He consequently denied the contentions of Behimer which were repeated in the motion in the instant interference. In denying the motion Law Examiner Disney in his decision of Feb. 9, 1927, stated:

> "In Ground 9, it is contended that Dubbs has no right to make counts 10 to 15 inclusive, in his application Ser. No. 266,396 for the reason that the specification, as originally filed, failed to disclose that the oil is 'heated to a cracking temperature' in its passage through the heating coil.
>
> 3841 "The initial sentence of the specification states that 'This invention relates to a process and apparatus for cracking hydrocarbon oils and has among its salient objects, etc.' Then follows a brief description of what Dubbs considers to be his salient objects. The detailed description follows, more or less closely, this brief description or outline. The original claims were limited apparently to what he considered to be novel. The application is addressed to those skilled in the art and apparently Dubbs did

not consider it necessary to explain features old and well known. He did state in the last two lines, however, that:

> 'The pressure may be maintained from 50 to several hundred pounds and the temperature from 500° F. upwardly.'

"Since the pressure and temperature vary with different crude oils and also with the grade of the commercial distillate desired, and, since all of these facts were known to those skilled in the art, he evidently thought it was not necessary to give these details but devoted substantially his entire description and claims to that phase of his process which he considered novel. All of the elements of an apparatus necessary to produce the process defined in the counts are disclosed in the Dubbs construction. If the temperatures and pressures which are well known are maintained on the various steps in the Dubbs process, the result will be the process of the counts. Although the specification does not specifically state that the oil is heated to a 'cracking temperature' since the invention relates to a process of cracking hydrocarbon oils it would seem that one skilled in the art would assume this to be the fact. If this conclusion is correct the disclosure in the Dubbs application is sufficient to support counts 10-15.

"Counts 10, 11 and 12 are not drawn specifically to the entire cracking process as is implied under Ground 10. As pointed out in discussing Ground 9, some steps in oil cracking are well known and apparently for this reason these steps are claimed broadly in counts 10, 11 and 12. With respect to that feature which Dubbs considered novel, namely, the reflux and charging stock move in separate streams toward each other under pump or other mechanical pressure, the claims are specific, sufficiently definite and free from ambiguity. A count for a cracking process could not be limited to one step in the process of oil cracking. It would be incomplete. Then one of the possible methods of claiming the entire process is to claim all which is old in the art broadly, and that which is new specifically. Counts 10, 11 and 12
3842 are deemed to be sufficiently distinct to be understood by one skilled in the art.

"As to ground 11, Dubbs states that this invention relates to a process and apparatus for cracking hydrocarbon oils, that vapor tubes 7 are larger and beyond the heating coils 6 and that vapors are given off and a certain amount of the residuum is formed. The temperatures and pressures given are sufficient to produce cracking and the vapor tubes 7 are heated to prevent cooling. Since all of the elements necessary to produce cracking are present and the necessary data are given, and since the application is addressed to those skilled in the art, the specification sufficiently discloses a process for cracking or converting oil. Further, since it requires a considerable time for all of the oil to become cracked undoubtedly some of the cracking or conversion occurs in the vapor tubes 7 which are prevented from cooling.

"In Ground 12 it is asserted that—

> 'Counts 10 to 15 are unpatentable for the reason that the specification is ambiguous, indefinite and insufficient and fails to describe the invention with the requisite clearness, fullness and exactness 'as to enable any person skilled in the art or science * * * to make, construct, compound and use the same' as required by Section 4888 of the Revised Statutes.'

"The counts are not regarded unpatentable as stated above for reasons pointed out in considering Grounds 9, 10 and 11. Further, in his specification, Dubbs describes the process of heating the oil under pressure, drawing off the vapors and condensing the same, returning certain condensate vapors to the heating zone and conducting others to a storage tank. The cracking temperatures and pressures, the periods allowed for the cracking operation, etc. were all common knowledge in the art when these parties entered the field and need not be mentioned either in the description or in the claim. (*Continental Rubber Tire Company* v. *Firestone Tire & Rubber Co.*, 151 F. R. 237, 239)"

Moreover, in the present interference counts 1 to 8 inclusive were allowed by the Board of Examiners-in-Chief. That tribunal had no difficulty in finding in the Dubbs application the idea of heating the oil in the coil 6 to a cracking temperature with the transfer of this oil to

an enlarged vapor zone 7 where cracking thereof con-
3843 tinued. This finding of the Board, concurring as it does, with the finding of the Law Examiner, will, we know, be quite persuasive. In ex parte Lettlier, C. D. 1897, page 171, the Commissioner held

> "It is presumed that the Examiners-in-Chief consider fully all matters bearing on the question of patentability of claims as to which they make a favorable recommendation, the question of new matter, as well as other questions."

Again, in ex parte *Painter* v. *Hall*, C. D. 1897, page 43, the Commissioner held:

> "In an interpartes case the Examiner is not precluded by the decision of the Examiners-in-Chief in an ex parte case, although said decision should be very persuasive."

The questions presented in Grounds 1, 2 and 4 of the Behimer motion have been adversely decided by the Law Examiner in Interference No. 52,305. Counts 1 to 8 of this interference were also allowed by the Board and consequently we do not believe that this tribunal will now see fit to disturb the decision it made in the earlier interference, or to overrule the action of the Board in allowing the counts of this interference in the ex parte Dubbs application.

Moreover, the motion filed by Behimer in the present interference contains a statement which clearly indicates that Grounds 1, 2 and 4 thereof should receive no serious consideration. On the last page of the motion Behimer frankly admits:

> "It is, of course, realized that the main feature of the counts relates to the clean circulation of reflux under mechanical pressure and as to this feature Behimer raises no objection."

3844 The foregoing statement constitutes a clean cut admission by Behimer that the Dubbs application discloses that which is new in the counts in issue, but seeks to avoid a contest of priority of invention as to such novel subject matter by asserting that the Dubbs application does not, with great clearness, disclose certain other steps of the process expressed by the counts which are broadly old in the art and do not serve to give vitality to the counts in issue. In other words, Behimer would totally ignore the important features of the invention con-

stituting the subject matter of the counts and endeavor to mislead by the assertion that there is nothing in the Dubbs application suggesting the heating of the oil in the heating tubes to a cracking temperature with a conversion of at least some of the heated oil in the enlarged vapor tubes communicating with the heating tubes, which operation standing alone is one well known in the art, and is, we believe, the precise operation described in the Dubbs application.

The application relates to a process for cracking oil. On page 1 of the specification there appears this statement:

> "The invention relates to a process and apparatus for cracking hydrocarbon oil."

This operation is carried out in the Dubbs application by first passing the oil through the heating tube 6. On page 4 of the specification the heating tubes are referred to as follows:

3845 "The process is operated as follows: The oil is fed into the small coil continuously at the desired rate and is there subjected to heat. The oil, as it passes through the smaller coil, may be said in effect to pass through the heating zone."

To the skilled man in the art the heating zone in a cracking apparatus could mean only that in this zone the oil receives its cracking heat. No other heating zone is defined in the Dubbs application. Since the process is admittedly designed for cracking and since the tubes 6 represent the only part of the apparatus referred to as a heating zone, the disclosure of the Dubbs application to one attempting to correctly understand it, can only mean that the oil in the heating zone receives the heat that it is to absorb, and since the process is one for the cracking of oil, such oil admittedly will be heated to a cracking temperature.

The Dubbs application then suggests that this small stream of oil be introduced to a series of communicating tubes of greatly increased diameter. These are referred to as the vapor zone or tube 7 in the Dubbs application. In describing the course of the oil on page 4 of the specification, it is stated:

> "The oil then passed to the larger coil or vapor zone."

It is quite manifest that this vapor zone 7 is not defined

as a heating zone, whereas the tubes 6 are defined as the heating zone of the cracking apparatus. The skilled man in the art desiring to obtain a rational understanding of that which is disclosed in the Dubbs application, would, without difficulty, realize from the foregoing description
that in the small tubes the oil in passing through
3846 the heating zone receives a cracking temperature and
that only a relatively small amount of cracking would occur in the heating zone because of the rapidity of the movement of the oil through the small tube 6. He would further understand that during the relatively slow movement of the oil through the enlarged vapor zone 7 ample vaporizing surface would be provided and the time element necessary to complete a cracking apparatus would be available so that the major part of the cracking would occur in this enlarged vapor zone and in such zone vapors would be liberated and separated from the residual oil. Such an understanding of the Dubbs operation would be in line with the knowledge of the art, since it is common in the prior art to employ tube and drum cracking systems where the oil is heated to a cracking temperature in the tube while conversion occurs in the drum.

There is, of course, no difficulty in finding those who do not wish to see, or who are unable to understand a disclosure and if called upon to construct an apparatus could probably, with sufficient experimentation, cause it to operate quite lamely. This represents the position of Texas Company in this controversy. However, this position is not a novel one, and was severely repudiated by
the Supreme Court in *Loom* v. *Higgins*, 105 U. S.
3847 In reference to the larger tubes 7, while they are shown as being heated, there is nothing in the operation. When the oil enters these tubes and vaporizes in large quantities considerable heat is dissipated. Heat is also lost by radiation. To keep the oil at a temperature sufficient to promote rapid cracking thereof, the enlarged zone may either be insulated or it may be heated to a degree which will compensate for some of the heat loss by vaporization and radiation. It is for this purpose that Dubbs heats the vapor zone. His operation does not in this respect differ from the Behimer practice, since Behimer may either insulate his large zone or he may heat it. The large tubes, however, are uniformly referred to in the Dubbs application as vapor tubes and not heating tubes. On the other hand, the tubes 6 are uniformly

referred to as being in the heating zone of the cracking plant. This disclosure quite clearly teaches to the man skilled in the art that the heating zone is employed to impart to the oil a cracking heat and that this oil then is transferred to a vapor zone where subsequent conversion and vaporization occurs.

The Texas Company has the temerity to suggest that the heating zone in the cracking process disclosed by Dubbs might be a preheating zone. Any one skilled in the art knows what a preheating zone is. Such a zone is employed to utilize waste heat from any apparatus. In the Dubbs disclosure the tubes 6 are not called preheating tubes. They are, however, cited as being within the heating zone of the cracking plant. This is the only heating
3848 zone of the plant, and, of course, the suggestion that this zone might be considered a preheating zone is just as ludicrous as the suggestion that it might be considered a dephlegmating zone. The foregoing suggestion of Behimer's is as preposterous as Grounds 1 and 2 of the motion itself. As to Ground 1, Behimer, while admitting that the apparatus is designed for the cracking oil, asserts that cracking temperatures are not attained in the coil 6. In Ground 2 of the motion, it is asserted that cracking temperatures are not attained in the vapor chamber 7. If the application is directed to a process for cracking oil, one must necessarily find that the oil is heated to a cracking temperature in either the smaller tube 6 or the larger tube 7. If the cracking temperature does not occur in the smaller heating tubes, then it must occur in the larger tubes, since it is only this part of the system that is heated, yet Behimer brazenly asserts that cracking occurs in neither of these elements of the apparatus. This, of course, cannot be true. These allegations, however, are just about as sound as the Behimer allegation that the oil in the Dubbs set-up in passing through the heating zone is not heated to a cracking temperature, and that such oil when it enters the enlarged zone 7, does not undergo further conversion. This operation, we think, is the one that the Dubbs application teaches with great clearness to the skilled man in the art.

The Law Examiner had no difficulty in disposing of Ground 4 of the Behimer motion. He recognized that such details as the appropriate temperatures and pressures for various kinds of oil were all recognized and known in the

N. B. In the file wrapper from which this copy was made this page 25 was not complete (as is shown on this page).

3849 Since the application is addressed to those skilled in the art, it is sufficient to start with that which is old and proceed to describe the novel features of the invention. In fact, it was not required that Dubbs give any operating condition to temperature and pressure, since such factors, as being stated, were very old in the art.

In *Carnegie* v. *Cambria,* 184 U. S. 403, the Supreme Court held:

> "He may begin at the point where his invention begins and describes what is made that is new and what he replaces in the old. That which is common and well known is as if it were written in the patent and delinated in the drawing."

Moreover, the Behimer parent application involved in this interference, as originally filed, gave no examples whatever of temperatures and pressure conditions. Subsequently, an example was added to the application by amendment. Such an amendment could only have been permitted on the theory that temperatures and pressures were not critical and were well known in the art, and consequently when interpolated in the application did not involve new matter.

At any rate on this precise point the Law Examiner has held that the Dubbs application does describe the invention with clearness requires by the statute. In his decision in Interference No. 52,305 he held:

3850 "Since the pressure and temperature vary with different crude oils and also with the crude of the commercial distillate desired, and since all these facts were known to those skilled in the art, he evidently thought it was not necessary to give those details, but devoted substantially his entire description and claims to that phase of his process which he considered novel. * * * The cracking temperatures and pressures, the periods allowed for the cracking operation, etc. were in common knowledge in the art when these parties entered the field, and need not be mentioned either in the description or the claims."

Ground 3 of the Behimer motion is so wholly devoid of merit that it needs but passing consideration. Counts 10 and 11 only require that the reflux be admitted to the

heating coil while hot. The degree of temperature of the reflux is not involved. So long as it is substantially above atmospheric temperature it is in a heated condition, as required by the counts.

Having in mind that the purpose of the Dubbs invention is to continuously recrack reflux condensate, it is preposterous to assume that he cools the condensate before returning it to the heating coil, and thereby loses the heat that it would otherwise contain. The stabilizer tank 24 of the Dubbs apparatus is not provided for the purpose of cooling the condensate. It is provided to store a sufficient quantity of condensate in order that gases will not be sucked from the dephlegmator into the pump and forced through the coil. This is a dangerous and undesirable operation. To provide the required surplus supply of condensate to insure the feeding of this material to the pump at all times, Dubbs proposes to use a stabilizer tank, but the rate of travel of the condensate through the
3851 heating coil is so rapid that this material does not remain in the stabilizer tank a sufficient time to materially cool. It is rapidly withdrawn from the tank and enters the tubes when in a highly heated condition.

Any other operation of the Dubbs apparatus would be viewed by the skilled man in the art as wholly irrational, since it would result in purposely wasting heat units that could otherwise be admirably employed.

It is believed that the motion to dissolve should be denied.

Respectfully submitted,
Chas. M. Thomas,
Attorney for Dubbs.

3852 (Paper No. 29, DECISION OF LAW EXR. Jan. 10, 1929.)

This interference is before the Law Examiner upon motions to dissolve by the parties Dubbs and Behimer.

Counts 1 and 11 illustrate the issue and are reproduced below:

1. A process of converting heavy into lighter hydrocarbons, consisting in passing a stream of hydrocarbon oil through a zone where said oil is heated to a cracking temperature, in passing the oil thence to and through an enlarged zone where conversion occurs, removing the vapors, subjecting them to reflux conden-

sation, returning reflux condensate without permitting the same to intermingle with a bulk supply of charging stock under a mechanical pressure to the heating zone for further treatment, in preventing an intermingling of any residue from said enlarged conversion zone with the oil in the heating zone, and in maintaining a pressure on the material during conversion in said heating and conversion zone.

3853 11. A process of oil conversion that comprises forcing a stream of oil under pressure once through an alongated heating zone of restricted cross section, applying heat to the oil in transit therethrough to raise the oil to a cracking temperature, delivering the heated oil into an enlarged zone where a body of liquid oil is maintained under pressure and at a cracking temperature, removing the evolved vapors from said enlarged zone, separating out the heavier constituents thereof in the form of a hot condensate and returning said condensate while still hot for a retreatment by positively forcing it into the elongated heating zone against the back pressure developed therein.

The party Dubbs contends that counts 1 through 8, in the step of returning the reflux condensate under "mechanical pressure" to the heating coil, call for means not disclosed by the party Behimer. In the Dubbs process and apparatus the reflux condensate is returned by a pump to the inlet of the heating coil through line 41 connected to the inlet fitting, as at 42. The raw oil is pumped through line 10 entering the same inlet fitting as at 11. The condensate return pump is also variously referred to in the counts as "pressure applying means" and as giving "forced" or "applied" mechanical pressure. The party Behimer uses an injector 7a to force in the reflux condensate, the pressure fluid in the injector being the raw oil supplied to the coil by pump 8.

The Board of Appeals in the parent case, 266,396 of the present Dubbs application held that counts 1 through 8 were patentably distinguished by the limitations mentioned over a prior Dubbs patent, but did not hold that the words quoted above implied a movable power driven mechanical element. The Board merely held that the claim distinguished over the method alternately disclosed or claimed in the patent, of returning the condensate by hydrostatic head.

The injector disclosed by Behimer is believed to come within the meaning of the quoted phrases. The
3854 definition of "mechanical" as given by Funk & Wagnalls Standard Dictionary does not require a movable medium for the transmission of mechanical pressure. The term does not require the fluid on which the pressure is applied to be separated from the fluid exerting the force by a movable element. Consistent with the finding of the Board, it excludes manual or natural pressure directly applied and includes a mechanical arrangement of elements, as in an injector, whereby the force of pressure given a fluid is transformed into useful work. It is noted that the moving party illustrates his argument with an educator rather than an injector. The fluid to be pumped or moved may, of course, be under a pressure greater or less than atmospheric, but in the case of the pump, as well as the injector, it is the pressure originally upon the fluid which moved it into position to be trapped by the piston of the pump or by the pressure stream of the injector, and to be delivered by mechanical pressure, i. e. pressure mechanically derived. Similarly and obviously the Behimer injector is a means for forcing the condensate into the heating coils as specified in counts 9 through 12, which were taken from the Behimer application. The counts must be given the broadest interpretation which they can reasonably support. *Cox* v. *Headley and Thompson*, 1920 C. D. 193; 275 O. G. 419. Whatever the difference between the apparatus disclosed by the different parties, the methods of both parties as expressed by the counts are believed the same.

The party Dubbs contends that an injector is inoperative in the process due to its inability to function under varying conditions and handle varying quantities of condensate. It seems evident that the injector can be designed to handle overloads and that by increasing the pressure at the raw oil pump it can handle overloads. It is
3855 possible that a pump possesses certain advantages over the injector, but that is not pertinent to the question of operativeness of the injector. The basis for the contention is not of such nature as to warrant dissolution. *Bowditch* v. *Tood*, 1902 C. D. 27.

Grounds 1, 2 and 4, upon which the party Behimer urges his motion to dissolve, i. e. the failure of the party Dubbs to disclose that oil is "heated to a cracking temperature" in its passage through coil 6, his failure to disclose "an

enlarged zone where conversion occurs", and failure to describe the invention with the clearness, etc., required by the statute, were cited as grounds 9 through 12 in the Behimer motion to dissolve in interference 52,305, against process counts and against Dubbs application 266,396, in which present counts 1 through 8 originated, and were there denied.

The present Dubbs application is a division of Serial No. 266,396. The present motion, so far as grounds 1, 2 and 4 are concerned, appears to be completely answered by the Law Examiner's decision in that interference. These grounds involve no further question in regard to counts 9 through 12, than they do in regard to counts 1 through 8, originally in Serial No. 266,396. No necessity for repetition is seen and the prior decision is extensively quoted in the brief for the party Dubbs.

The additional ground advanced by the party Behimer that the party Dubbs fails to disclose the return of "hot condensate", "while still hot", for retreatment; as required by counts 10 and 11 is believed unfounded. No temperature is specified and although the reflux return line in the Dubbs apparatus is not lagged, the condensate would not cool to a degree which could not be called "hot" in its short length of travel through such return lines.

The motions of both parties to dissolve are denied.

I. P. Disney,
Law Examiner.

3856 (Paper No. 31, DISCLAIMER, Dec. 2, 1931.).

Carbon P. Dubbs, whose application Serial No. 6060 filed Jan. 31, 1925, is involved in the above identified interference, hereby disclaims all of the counts of the issue as quoted below, and withdraws from the interference;

(Here quotes counts as set up in Declaration of Interference.)

Signed at Chicago, Illinois, this 26th day of October, 1931.

Carbon P. Dubbs.

Witness:

Lee J. Gary.

Universal Oil Products Company, assignee of the entire right, title and interest in and to the above indicated application of Carbon P. Dubbs, Serial No. 6060, filed Jan. 31, 1925, involved in the above entitled interference, hereby assents to the foregoing disclaimer.

Universal Oil Products Company,
By H. J. Halle,
President.

Attest:
McCauley Carter, (t)
Assistant Secretary.

3857 (Paper No. 32, DECISION, Dec. 5, 1931.)

A disclaimer of the invention covered by the subject matter in issue having been filed by Dubbs, the junior party, and the same having been concurred in by the assignee and otherwise found to comply with the requirements of Rule 125, priority of invention of the subject matter in issue is hereby awarded to Otto Behimer, the senior party.

The said instrument is construed as a waiver of the right of appeal and no time for appeal is therefore set.

H. H. Jacobs,
Examiner of Interferences.

DX 202

No. 140

THE FIRST NATIONAL BANK OF PORT ARTHUR

RESERVE DISTRICT NO. 11

PORT ARTHUR, TEXAS, SEPT 7, 1920 No. B 29077

PAY TO THE ORDER OF * * * * OTTO HANNACK * $100.00

ONE HUNDRED [illegible]

CASHIER'S CHECK

[signature]

PRESIDENT

DX 203

FROM
S. OLSEN. 19-77. 2nd st.
BROOKLYN. N. York.

MR.
GEO. WITTE.
1611- 5th. st.
PORT ARTHUR
TEXAS.

1917

3862 DX 203.

August 27, 1926.

My dear Friend:

My leaving Texas came about unexpectedly, on account of having the photos in the post office so when I started to call for same, Wagley, Morrison and two city men were stationed at corner of post office and Beaumont. Morrison is an operator, working for a private detective office McCabe, at Houston, also a branch at Beaumont, in the same building where the photographer is; Wagley is, as you know, the head of your company, working as a detective; G. K. Smalley stationed and living at Beaumont Hotel, a Pinkerton operator from Houston, also working for your company. Morrison saw Harry going up to the photographer. He also knew that a package had been shipped to me at Beaumont office but they did not know the contents of same.

Seeing those four men together, I outfigured them by ordering the package to be forwarded to me at Chicago and I left the same night.

I could not reach you by phone or otherwise, to explain my intention. After waiting for three days in Chicago for the package, I secured help from the postal inspector and wired the post master at Beaumont, to state delay and reason for not getting out on first dispatch said registered package.

All registered mail unclaimed for five days will be returned to sender and they hoped to have that done so they could claim the package when returned.

After leaving east I called on a couple of parties and secured some affidavits and came on here to help out an operator who is working on similar lines.

I saw Harry at his father's home and we agreed on a plan of action on his return. We decided to get together and talk over the entire situation.

Those photos secured by you are dated 1925 and bear no relation to any evidence wanted of the years 1916 to 1919. Now George, if I could get a letter or the report stating their failure of the early experiments, acknowledging to some one, some official in your company that report or that letter is worth all the rest of the stuff together.

3863 Morris has in my mind double-crossed us so look out for him. In fact, from the first day I met him I had no confidence in him.

George, I want you to start writing up your work done for your company since starting. Do so in your own way, setting forth all happenings and date of same, up to 1920 or later if you know of some particular incident which would help along the cause. I shall then take same report and shape it into an affidavit.

Could you see E. W. Allen also Jim Burlingham, H. H. Pond and N. F. Fuller, and ascertain in your own mind if it would be safe to talk to those men regarding an affidavit. I cannot promise those boys a job, but will take care of them for their trouble and time in giving an affidavit. Bat Dempsey you know also.

Will you also try to secure the data when those men started to work for your company. Now George please sit still, I am breaking on this end in order to have a talk with you and Harry. Expect to leave Sunday the 29th and will arrange to see you somewhere on the coming week-end.

Kindest regards and hoping that our next trip will bring results, I am

Your friend always,

3865 DX 206.

DEPARTMENT OF COMMERCE

United States Patent Office

To all persons to whom these presents shall come, Greeting:

This Is To Certify that the annexed is a true copy from the records of this office of the File Wrapper, Contents and Drawings, in the matter of the

Letters Patent of

Carbon P. Dubbs, Assignor to
Universal Oil Products Company,

Number 1,850,261, Granted March 22, 1932,

for

Improvement in Processes of Cracking Hydrocarbon Oils.

In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City

of Washington, this eleventh day of January, in the year of our Lord one thousand nine hundred and thirty-five and of the Independence of the United States of America the one hundred and fifty-ninth.

Conway P. Coe,
Commissioner of Patents.

(Seal)
Attest:
D. Wilson,
Chief of Division.

(Stamp) $15 rec'd Dec. 12, 1918. C. C. U. S. Pat. Office. Canceled 25c-cent U. S. documentary stamp.

3867 PETITION.

Honorable Commissioner of Patents:

Your petitioner, Carbon P. Dubbs, a citizen of the United States residing in the City of Wilmette, County of Cook, and State of Illinois, whose postoffice address is 905 Greenleaf Avenue, Wilmette, Illinois, prays that Letters Patent of the United States may be granted to him for new and useful improvements in

Process And Apparatus For Cracking Hydrocarbon Oils

described and claimed in the annexed specifications; and he hereby appoints Frank L. Benknap, 1014 First National Bank Building, Chicago, Illinois, his attorney, with full power of substitution and revocation, to prosecute the application to make alterations and amendments therein, to receive the patent and to transact all business in the Patent Office connected therewith.

Signed at Chicago, Illinois, this 30th day of November, 1918.

Carbon P. Dubbs.

1

3868 SPECIFICATION.

To All Whom It May Concern:

Be It Known, that I, Carbon P. Dubbs, a citizen of the United States, residing in the City of Wilmette, County of Cook and State of Illinois, have invented certain new and useful improvements in

Per A Process *(OF) ~~and Apparatus for~~ Cracking Hydrocarbon Oils

of which the following is a specification:

Per A. This invention relates to a process *(OF) ~~and apparatus for~~ cracking hydrocarbon oils and has among its salient objects, to provide an improved process in which the vapors which pass off from the vapor chambers are subjected to the action of a reflux condenser and the condensed portions thereof returned to the system at a point remote from the vapor zone; to provide a process of the character above referred to in which the condensate from the reflux condensers is returned to or near a point where the oil to be treated enters the system and at a relatively cool part of the system; to provide a process of the character above referred to in which the oil is subjected to the pressure of the generated vapors during treatment; to provide a process adapted for continuous

Per A operation as distinct from batch operation; ~~to provide an improved apparatus for carrying out the above process~~ and in general to provide improvements of the character referred to.

*Matter in parentheses inserted.

In the drawings:

Fig. 1 and 1A together, from a side elevation of the apparatus with parts shown in section.

2

3869 Figs. 2 and 2A together, form a plan view with parts shown in section and other parts broken away.

Referring to the drawings, 1 designates the furnace provided with bridge wall 2, flue 3 and stack 4. The furnace may be separated into two compartments by means of dividing wall 5. Within the furnace chambers are mounted two sets of tubes 6 and 7 mounted on suitable supports 8. The tubes 6 are relatively smaller than the tubes 7. The tubes 6 may be Per C from an inch in diameter to six inches and the tube*(S) 7 from 8 inches to 20 inches in diameter although it is to be understood that I do not limit myself to a tube of any particular size nor to the number or length of the tubes. These must vary as conditions require and will be apparent to one skilled in the art. The ends of the tubes are provided with cap members 9 which can be removed to permit the ends of the tubes being opened and the tubes cleaned. Instead of removing the caps 9 they may be provided with suitable doors or closure members (not shown). The oil to be treated is fed by means of a pump (not shown) from any source of supply

* Matter in parentheses inserted.

through the feed pipe 10 to one end of the coil 6 as shown
at 11. The pipe 10 may be provided with a controlling valve
12. The oil passes through the coil 6 to connecting pipe 13
to one end of the large coil 7 as shown at 14. The vapors
can pass out of the coil 7 through upright pipe 15 which is
connected at its lower end to manifold 16 leading from ad-

3

3870 jacent ends of the large tubes of the coils 7. At its upper end, the pipe 15 is connected to a horizontal cross
pipe 17 from either end of which lead downwardly extending vapor lines 18 and 19. In a generally similar
manner, the other end of the large coil 7 is connected to
riser 20, the upper end of which is connected to horizontal
branch pipe 21 which is provided with a pair of downwardly
extending vapor lines 22 and 23. The downwardly inclined
vapor lines 18, 22, 23 and 19 are connected to tank 24.

Per C This tank 24 connects with an aerial *(CONDENSER) ~~tank~~ 25 provided with
a series of upright pipes 26. The upper end of the aerial
condenser is connected by pipes 27 and 28 to a water condenser 29. The water condenser 29 is connected by the pipe
30 to a receiving tank 31. The condensed vapors are drawn
off through pipe 32 controlled by throttle valve 33. The

* Matter in parentheses inserted.

gas escape pipe 34 is also provided with throttle valve 35.
The receiving tank is provided with pressure gauge 36, liquid
level glass 37 and safety valve 38.

As a novel feature of the process and apparatus the
vapors which are condensed in the lines 18, 22, 23 and 19
and in the aerial, are collected in the tank 24. The condensed
vapors from the tank 24, which tank serves in effect as a
stabilizer, are drawn out from the end of the tank from pipe
39 to pipe 40. From pipe 40 the condensed vapors are de-
livered to pipe 41 to the small coil 6 as shown at 42. These
" C *(CONDENSED) vapors can either pass by gravity to the coil or can be forced
in by means of a pump 43. This pump is interposed in the
line 40 by branches 44 and 45 controlled by valves 46 and 47.

4

3871 A valve 48 is interposed in the line 40. When the valves
46 and 47 are closed, the pump is not used in which case
the valve 48 is open. If it is desired, to use the pump,
the valve 48 is closed and the valves 46 and 47 opened.
The oil is drawn off from the larger coil through the
draw off lines 52 and 53 controlled by the valve 54. Gas
or fuel oil for the burners ars fed through lines 49 to
Per A ~~burners~~ 50 and 51 *(PIPES WHICH SUPPLY
" C THE BURNERS (NOT SHOWN)).

* Matter in parentheses inserted.

The process is operated as follows: the oil is fed into the small coil continuously at desired rate and
is there subjected to heat. The oil as it passes through
the smaller coil may be said in effect to pass through the
" C heating *(OR CRACKING) zone. The oil then passes to the larger coil or
vapor zone. The undistilled portion of the oil is drawn
off through the draw off lines to a residuum tank. The vapors
pass through the downwardly inclined vapor lines to the tank
24. The heavier vapors will condense either in the downwardly
inclined lines in the tank or in the aerial and will be drawn
from the tank by gravity or by means of the pump, back to
the inlet side of the small coil. The advantage of this
method of treating the heavy condensed vapors is that they
are continuously being returned to the heating zone but
inasmuch as they are not permitted to fall back into the
vapor zone as is the usual process, they do not tend to
unduly cool the vapors in the vapor zone. This method of
handling the heavy condensed vapors not only greatly lowers
the fuel cost but results in a better operation. By con-
" A trolling the temperature of the tank *(24) and the vapor lines,
anything below the given boiling or end point can be pre-

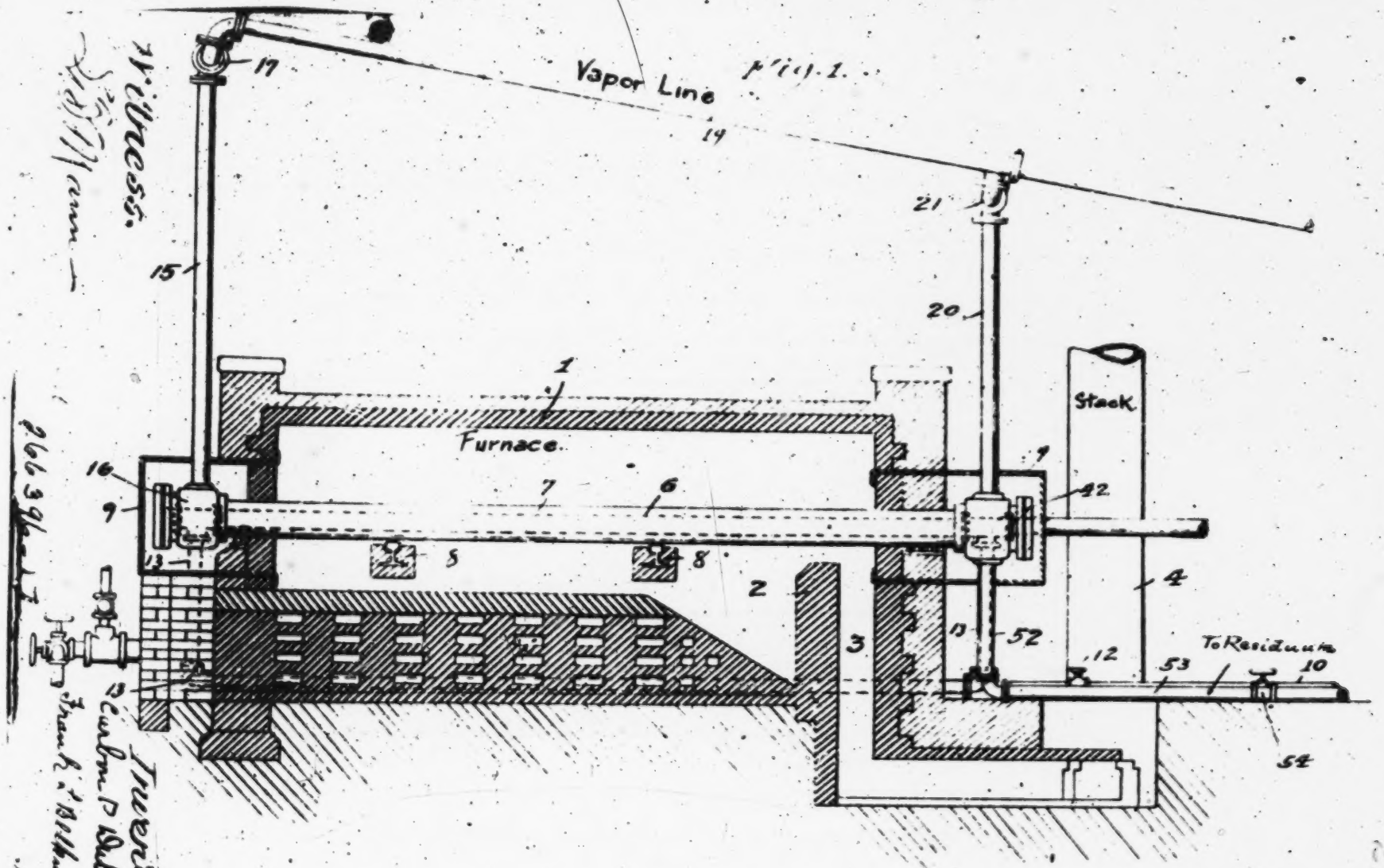
5

* Matter in parentheses inserted.

3872 vented from passing to the water condenser. This can
Per K be controlled either by the *(NUMBER OR AREA) ~~amount~~ of the vapor lines
" A or by applying a cooling member *(NOT SHOWN) to the tank *(24). The oil
is maintained under pressure during distillation, and con-
densation by regulating the distillate and gas valves of
the receiver tank. The pressure may be maintained from
" C 50 to several hundred *(POUNDS) ~~points~~ and the temperature from
500°F upwardly.
Insert A^1 (A^1 fols)
Insert L^1 (L^1 fols)

6

*Matter in parentheses inserted.


Vapor Line
Fig. 1.
Witnesses:
Furnace
Stack
To Residuum
Inventor:

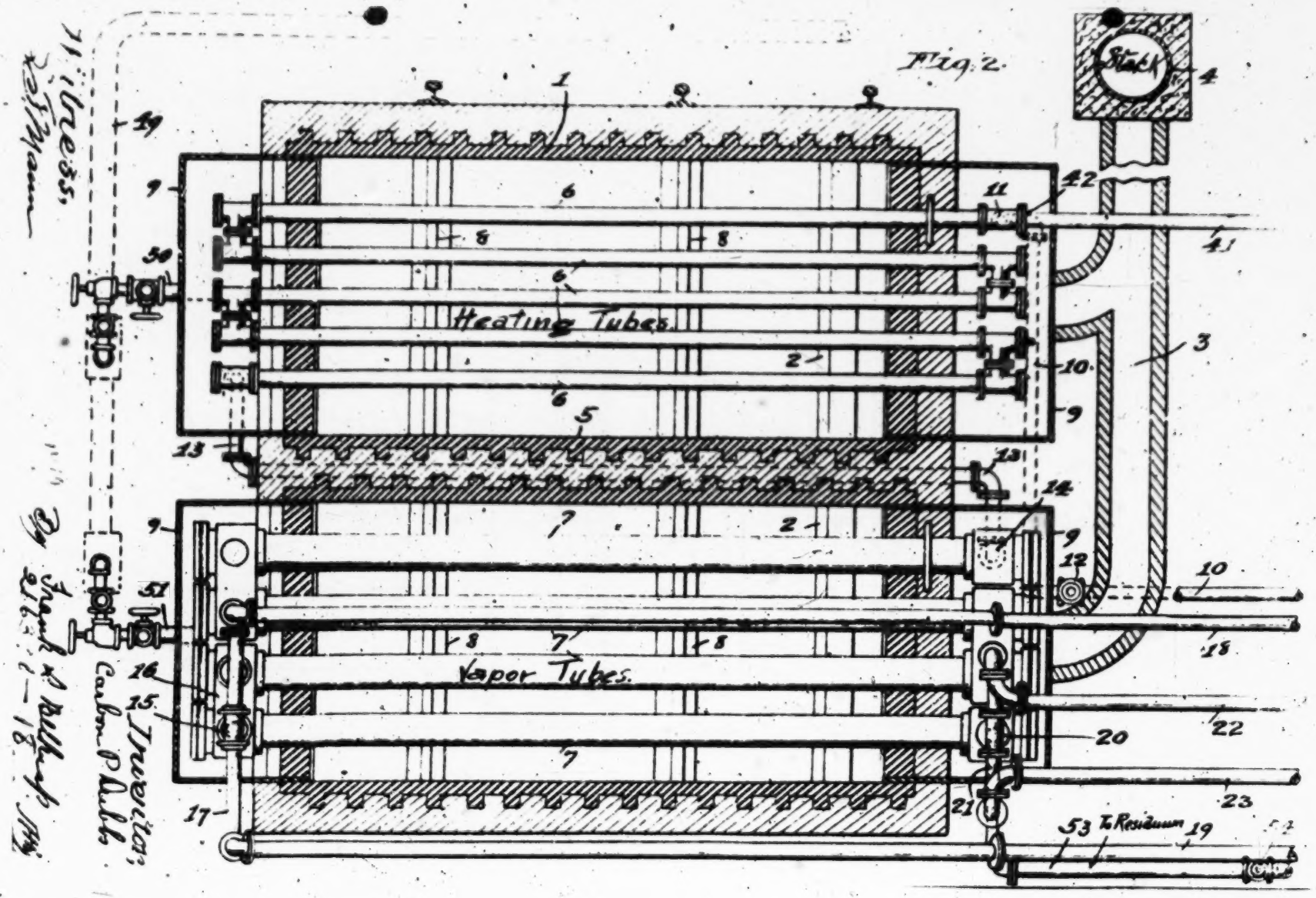
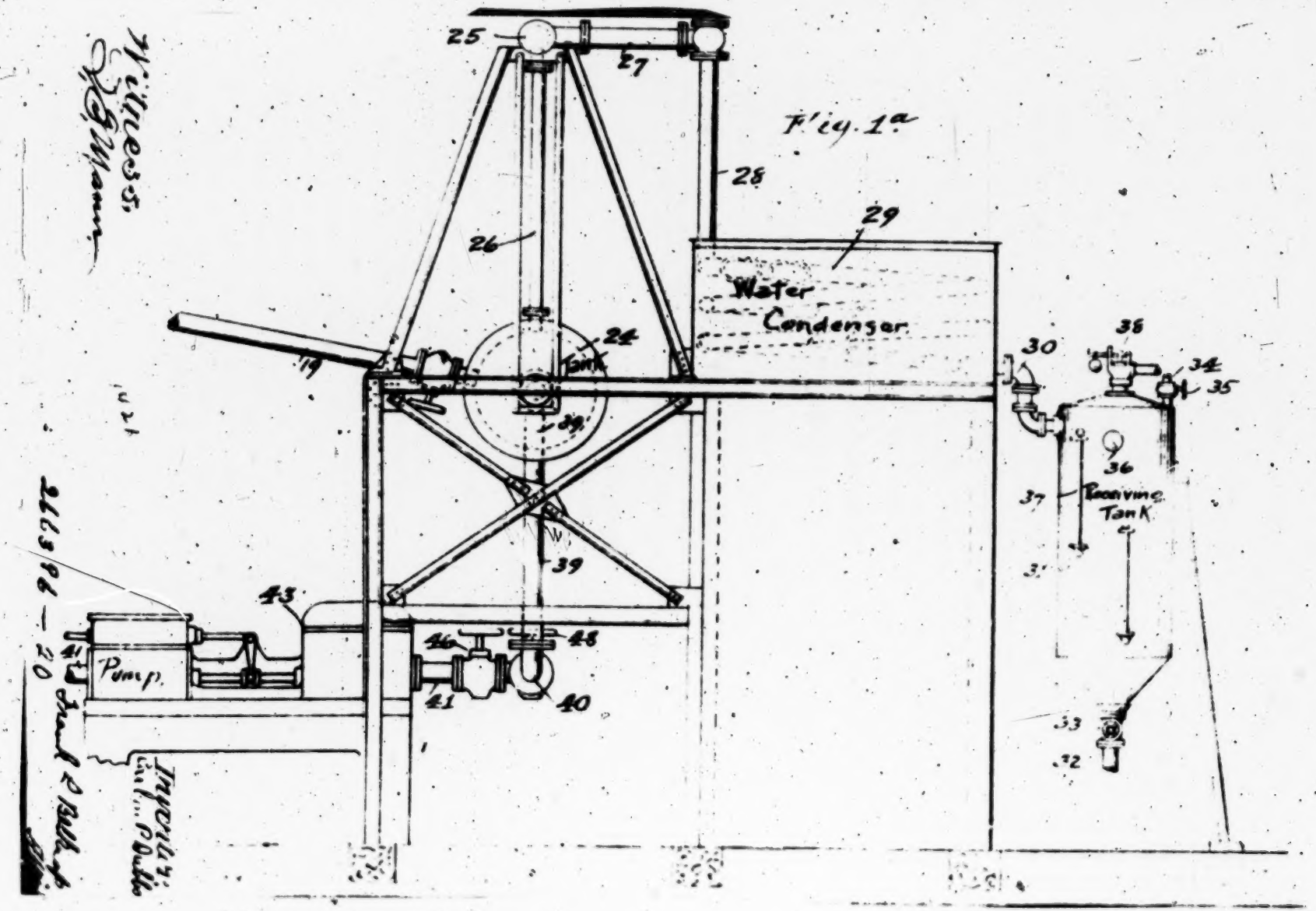


Fig. 2.
Stack
Heating Tubes.
Vapor Tubes.
To Residuum
Witness,
Inventor,
By
Attorney

Fig. 2.

Witnesses.

Inventor:
Carbon P. Dubbs
By Frank L. Dalkamp
266996 - 14


Witnesses.
Fig. 1a
25
27
28
29
26
Water
Condenser
24
Tank
19
30
38
34
35
36
37
Receiving
Tank
39
43
Pump.
46
48
41
40
33
32

3902 2—260

Div. 31 Room 169 CSD/AMT Paper No. 8

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

(Stamp) Patent Office Mar 8 1923 Mailed.

DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington

Frank L. Belknap
1014 1st Nat. Bank Bldg.
Chicago, Ill.

Please find below a communication from the Examiner in charge of the application of Carbon P. Dubbs, filed Dec. 12, 1918, serial #266396, Process of Cracking Hydrocarbon Oils.

Thomas E. Robertson,
Commissioner of Patents.

Amendment of Feb. 27, 1923 is of record.

Since the last office action the examiner has noted Dubbs, 1,392,629, Oct. 4, 1921, 196-31.

It is pointed out that when an applicant has several applications in the office the one which first matures into a patent will serve as a reference against the others for common subject-matter. Upon reconsideration of the claims of this application it is noted that they define subject-matter in common with that disclosed by the patent.

The claims are rejeced on Dubbs, cited.

No positive means for regulating the temperature of the receiver as defined in claim 4 has been disclosed.

The term "without re-cycling any substantial portion" in claims 7, 8 and 9 is misleading since none of the residuum is re-cycled. Claim 4 is further rejected as unwarranted and claims 7, 8, and 9 are further rejected as misleading.

This case is special under Commissioner's order 2210, and prompt response should be made.

W. N. Holmes,
Examiner.

C.S.D.

36

3903 IN THE UNITED STATES PATENT OFFICE.

Paper No. 9

(Stamp) Application Div. Mar 8 1924 U. S. Patent Office.

Div. 31, Room 169
Carbon P. Dubbs
Process of Cracking Hydrocarbons

Filed Dec. 12, 1918
Serial No. 266396

Hon. Commissioner of Patents,

Sir:

In the matter of the above entitled application, and responding to official communication of March 8, amendment is hereby made as follows:

In view of the applicant's previously issued claims, the claims will be modified so as to cover only features of the process not claimed in said patent. Other features which are shown in the earlier patent but that are not claimed, and are also shown in this application will be specifically claimed, as the ruling in Hammond and Hammond merely holds that a patentee may, in a later application, claim subject matter shown but not claimed in an earlier patent of his own.

With the foregoing in mind, it is requested that the following amendments be made:

3904 37

D5 *(4) †[4]: A continuous process for cracking hydrocarbons to produce lighter hydrocarbons which comprises progressively heating*

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~liquid oil in a stream of restricted cross section to a cracking~~
~~temperature without substantially decomposing said oil, in then~~
~~delivering the heated oil while in a substantially liquid phase into~~
~~an enlarged chamber where a body of said oil is maintained under~~
~~pressure for an extended period, and supplying sufficient heat to~~
~~the oil in said chamber to keep it at a cracking temperature to~~
~~effect decomposition thereof.~~

~~*(5)~~ †[2]: ~~A continuous process for cracking hydrocarbons~~
~~to produce lighter hydrocarbons which comprises progressively~~
~~heating liquid oil in a stream of restricted cross section to a~~
~~cracking temperature without substantially decomposing said oil,~~
~~in then delivering the heated oil while in a substantially liquid~~
~~phase into an enlarged chamber where a body of said oil is maintained~~
~~under pressure for an extended period, in supplying sufficient heat~~
~~to the oil in said chamber to keep it at a cracking temperature to~~
~~effect decomposition thereof, in discharging vapors from said chamber to~~
~~a reflux condenser, in returning reflux condensate for recracking, and in~~
~~withdrawing residium from said system without permitting the same to enter the~~
Sub E[1] ~~cracking coil.~~

38

3905 ~~*(6)~~ †[3]: ~~A process for converting heavy into lighter~~
~~hydrocarbons, consisting in progressively advancing a stream of~~

---

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~*hydrocarbon oil through a cracking coil where said oil is heated*~~
~~*to a cracking temperature but where substantial vaporization is*~~
~~*prevented; in continuously introducing the said highly heated oil*~~
~~*to an enlarged chamber where vaporization thereof occurs; in*~~
~~*applying heat to said chamber to keep the oil therein constantly*~~
~~*at a cracking temperature, in discharging vapors from said chamber,*~~
~~*and in maintaining a superatmospheric pressure on said system.*~~

*(7) †[4]: ~~A process for converting heavy into lighter~~
~~*hydrocarbons, consisting in progressively advancing a stream of*~~
~~*hydrocarbon oil through a cracking coil where said oil is heated*~~
~~*to a cracking temperature but where substantial vaporization is*~~
~~*prevented, in continuously introducing the said highly heated oil*~~
~~*to an enlarged chamber where vaporization thereof occurs, in*~~
~~*applying heat to said chamber to keep the oil therein constantly*~~
~~*at a cracking temperature, in discharging vapors from said chamber*~~
~~*for passage through a series of connected condensing lines, in collecting*~~
~~*the condensate in an enlarged receiver disposed above the entrance*~~
~~*to the cracking coil, in feeding said condensate to the cracking coil,*~~
~~*and in withdrawing residium from the system.*~~

---

*Matter in parentheses inserted.
†Matter in brackets precanceled.

REMARKS.

Every claim now in the application is limited to one or both of the following features. That is, the claims are limited to a process in which heat is applied to the vapor chamber to keep the oil at a cracking temperature after it enters this chamber or to a process where the condensate is collected in an enlarged tank which is elevated and maintained far above the cracking coil so as to keep a constant

39

3906 supply which feeds regularly into the cracking coil.

Some claims include both of these limitations. The Dubbs patent, while showing a somewhat similar process, does not claim these features, and the applicant is clearly entitled at this time to claim such features as are shown in the two applications where the patent makes no attempt to claim these specific details or steps of the process.

An early allowance is asked.

Respectfully submitted,
Carbon P. Dubbs,
By Frank L. Belknap.

March 4, 1924

40

3913 IN THE UNITED STATES PATENT OFFICE.

Paper No. 12

(Stamp). Application Div. Jul 17 1924 U. S. Patent Office.

Div. 31, Room 169,
Carbon P. Dubbs,
Process of Cracking Hydrocarbon Oils,

Filed Dec. 12, 1918,
Serial No. 266,396.

SUPPLEMENTAL AMENDMENT.

Hon. Commissioner of Patents,

Sir:

In the matter of the above entitled application, amendment is hereby made as follows:

In claim 4 of the amendment filed May 28, 1924, line 10,

change "from" to —in—. Same claim, line 11, change "an applied" to —a mechanical—.

Claim 5, line 11, change "an applied" to —a mechanical—.

Claim 7, line 12, cancel "an imposed" and insert —a mechanical—.

Add the following claims:

F[1] *(5) ~~8~~. A process for converting heavy into lighter hydrocarbons, consisting in passing a stream of oil through a heating coil to be subjected to a cracking temperature, in delivering the heated hydrocarbon oil to an enlarged zone where conversion occurs, in preventing a return of residual oil from said enlarged zone to said coil, in passing generated vapors to a reflux condenser where the insufficiently cracked vapors are condensed, in advancing reflux condensate

Per H ~~free from residual oil~~ from said condenser, and a stream of ~~raw~~ charging

47

3914 stock from a source of supply, in separately moving bodies each under a mechanical pressure, in introducing said separately moving bodies while each is advanced under a pressure to said heating coil for passage therethrough, and in maintaining a superatmospheric pressure on the oil undergoing conversion in said coil and said enlarged zone.

*(6) ~~9~~. A process for converting heavy into lighter hydrocarbons, consisting in passing a stream of oil through a heating coil where said oil is subjected to a cracking temperature, in

Per H delivering the highly heated oil ~~while substantially in a liquid phase~~

* Matter in parentheses inserted.

to an enlarged zone where conversion of the oil occurs, in passing
vapors generated from the converted oil to a reflux condenser where the
insufficiently cracked vapors are condensed, in advancing the reflux
" H condensate ~~*free of residual oil*~~ from said condenser and ~~*raw*~~ charging
stock from a source of supply in separately moving bodies each under an
imposed mechanical pressure, in merging said separately moving
bodies for passage in an intermingled condition through said heating
coil, in substantially continuously withdrawing residuum from said
Per G enlarged zone without again admitting the same to the *(HEATING) ~~*cracking*~~ coil,
and in maintaining a superatmospheric pressure on the oil in said
coil and in said enlarged zone.

*(7) ~~*10*~~. A process for converting heavy into lighter
hydrocarbons, consisting in passing a stream of oil through a heating
coil where said oil is subjected to a cracking temperature, in
" H delivering the highly heated oil ~~*while substantially in a liquid phase*~~
to an enlarged zone where conversion of the oil occurs, in passing
vapors generated from the converted oil to a reflux condenser where the
insufficiently cracked vapors are condensed, in advancing the reflux
" H condensate ~~*free of residual oil*~~ from said condenser and ~~*raw*~~ charging
stock from a source of supply in separately moving bodies each under an

48

3915 imposed mechanical pressure, in merging said separately moving

* Matter in parentheses inserted.

bodies for passage in an intermingled condition through said heating
coil, in substantially continuously withdrawing residuum from said
Per G enlarged zone without again admitting the same to the *(HEATING) ~~cracking~~ coil,
and in maintaining a superatmospheric pressure on the oil in said
coil and in said enlarged zone and on the vapors while passing
through said reflux condenser.

Add N[1] ~~11. A process of converting relatively heavy into lighter hydrocarbons, consisting in passing a stream of~~
" H ~~oil through a *(COIL IN A HEATING) zone where the oil is heated to a cracking temperature~~
" H ~~oil through a *(COIL IN A HEATING) zone the oil thence to and through a zone where vaporization takes place, removing the vapors, subjecting them to reflux condensation, returning reflux condensate~~
Per G ~~under a mechanical pressure to the *(HEATING) †[cracking] zone for further cracking, removing the residue after said vaporization from the system without permitting intermingling of any substantial portion thereof with the oil in the heating zone, and maintaining a pressure on the material during the conversion in said coil and chamber.~~

~~12. A process of converting heavy into lighter hydrocarbons, consisting in passing in an advancing direction a~~
Per G ~~stream of oil in a coil through, a *(HEATING) zone where the oil is heated to~~
Per H ~~a cracking temperature †[but substantial vaporization prevented,] and~~
Per M ~~thence to and through a zone where vaporization takes place, removing the vapors and passing them through a reflux condenser, in returning~~

*Matter in parentheses inserted.
†Matter in brackets precanceled.

~~a portion of the reflux condensate free of residual oil under a~~
" " ~~mechanical pressure to said *(HEATING) coil for further treatment therein,~~
~~in removing residue from the system after said vaporization without~~
~~permitting contact or intermingling with any substantial portion~~
~~thereof with the oil in the heating zone, in maintaining a vapor pressure~~

49

3916 ~~on the oil undergoing distillation and condensation in said system.~~

~~13. A process of converting heavy into lighter hydrocarbons, consisting in passing in an advancing direction a~~
~~stream of oil in a coil through a zone where the oil is heated to~~
Per H ~~a cracking temperature~~ †[~~but substantial vaporization prevented,~~]
~~and thence to and through a zone where vaporization takes place,~~
~~removing the vapors and passing them through a reflux condenser,~~
~~in forcing both reflux condensate from said condenser and charging~~
~~stock under an applied mechanical pressure in a stream through the~~
Per G ~~*(HEATING)~~ †[~~cracking~~] ~~coil, in removing residue from the system after said~~
~~vaporization without permitting contact or intermingling with any~~
~~substantial portion thereof with the oil in the heating zone, in~~
~~maintaining a vapor pressure on the oil undergoing distillation and~~
~~condensation in said system.~~

~~14. A process of converting relatively heavy into lighter hydrocarbons, consisting in passing a a stream of oil~~
~~through a coil in a heating zone where said oil is heated to a cracking~~

* Matter in parentheses inserted.
† Matter in brackets precanceled.

" H ~~temperature~~ †[~~but without substantial vaporization,~~] ~~in passing the oil to an enlarged zone where conversion thereof occurs, in introducing generated vapors to a reflux condenser, in returning reflux condensate free~~

Per I ~~of residual oil*(,) mixed with charging stock under a forced mechanical~~

Per G ~~pressure to the inlet of said *(HEATING)~~ †[~~cracking~~] ~~oil, in preventing the return of any liquid residual oil from said enlarged zone to the~~

Per M ~~*(HEATING)~~ †[~~cracking~~] ~~coil, and in maintaining a superatmospheric pressure on the oil undergoing conversion in said system.~~

~~15. A process of cracking oil, consisting in continuously passing a stream of oil through a series of tubes~~

Per G ~~heated in a *(HEATING)~~ †[~~cracking~~] ~~zone where said oil is heated to a cracking~~

Per H ~~temperature,~~ †[~~but substantial vaporization prevented,~~] ~~in delivering the oil to an enlarged vapor chamber where vaporization takes place, in~~

50

3917 ~~removing vapors from said chamber and subjecting them to an initial condenser where portions of the vapors are condensed, in subjecting the condensed portion of the vapors to final condensation, returning the condensate from said initial condenser under an applied~~

Per G ~~mechanical pressure to the inlet side of said *(HEATING)~~ †[~~cracking~~] ~~tubes, in continuously drawing off residue from the vapor chamber and preventing~~

" " ~~it from returning to the *(HEATING TUBES)~~ †[~~cracking zone~~]; ~~and in maintaining a pressure~~

" " ~~on the oil in said *(HEATING)~~ †[~~cracking~~]

Per M ~~tubes, enlarged vapor chamber and initial condenser.~~

---

* Matter in parentheses inserted.
† Matter in brackets precanceled.

~~*(8)~~ †[~~16~~]: ~~A process of converting heavy into lighter hydrocarbons, consisting in passing oil through a coil in a heating zone, in delivering the heated oil to an enlarged chamber where vaporization occurs, in removing vapors and passing them through a reflux condenser, in collecting an accumulated body of reflux condensate maintained in advance of the entrance to~~ †[~~a~~] ~~*(AN INDEPENDENT) feeding pump, in~~

Per G ~~continuously forcing condensate from said body by the *(INDEPENDENT) pump to the~~

" I ~~*(HEATING)~~ †[~~cracking~~] ~~coil *(WITH THE ADVANCING STREAM OF CHARGING STOCK PASSING THERETHROUGH), in removing the residue after said vaporization from the system without permitting intermingling of any substantial~~

" " ~~portion thereof with the oil in the *(HEATING)~~ †[~~cracking~~] ~~coil, and in maintaining~~

Sub N[1] ~~a superatmospheric pressure on the oil undergoing treatment.~~

~~*(9)~~ †[~~17~~]: ~~A process of converting heavy into lighter hydrocarbons, consisting in passing a stream of oil through a heating coil where said oil is subjected to a cracking temperature, in discharging the heated oil to an enlarged chamber where conversion occurs, in removing the vapors and passing the same to a reflux condenser, in collecting condensate from said condenser in an accumulated oil body adjacent the entrance to a feeding pump, in forcing condensate under pressure from~~

Per G ~~said body by said pump to the inlet side of the *(HEATING)~~ †[~~cracking~~] ~~coil, in preventing the passage of liquid residual oil from said enlarged chamber to~~

---

* Matter in parentheses inserted.
† Matter in brackets precanceled.

Per N ~~the *(HEATING)~~ †[~~cracking~~] ~~coil, and in maintaining a superatmospheric pressure on the oil undergoing conversion.~~

51

3918

F² *(9) ~~*(9)~~ ~~18.~~ A process of converting heavy into lighter hydrocarbons, consisting in passing a stream of oil through an elongated passageway to be subjected to a cracking temperature, in delivering the heated oil to an enlarged zone where substantial vaporization occurs, in discharging vapors to a dephlegmator where the insufficiently cracked vapors are condensed, in collecting the condensate in an oil body, in introducing

Per H reflux condensate ~~free of residual oil~~ from said collected body and

Per G *(CHARGING STOCK) ~~raw oil~~ from a source of supply to the ~~cracking coil~~ *(ELONGATED PASSAGEWAY) by advancing the

" H reflux condensate and *(CHARGING STOCK) and ~~raw oil~~ toward one another in separately moving stream each under a mechanical pressure, in merging said streams for passage in an intermingled condition through the

" " *(ELONGATED) ~~cracking~~ passageway, in removing residue from said enlarged zone without permitting intermingling thereof with the oil in said elongated heated passageway, and in maintaining a superatmospheric pressure on the oil in said system.

Insert H²

Claims 4 to 7 submitted in the last amendment, it is believed, were fully argued, and they need not be further discussed. They cover a specific invention not shown in the applicant's patent No. 1392629. They, however, include

* Matter in parentheses inserted.

every step of the broad invention disclosed in the broader claims of the applicant's patent, plus the additional and highly important and useful steps of advancing the reflux condensate in a stream under its own applied pressure and the raw oil in the second stream, so that these two streams, one of hot oil and the other of cold oil that may contain moisture, merge not in a pump, but as separately moving liquid bodies so that the foaming or frothing that occurs has no affect on any mechanical part. The applicant's position regarding these claims has been fully expressed. In his judgment they are clearly allowable.

52

3919 The history of the application will show that as originally filed, the broad process now being claimed was claimed by the applicant. In fact, the original claims recite broadly the return of the reflux condensate to the cracking coil, the drawing off of the unvaporized residue from the vapor zone, and the applicant has in a fully legitimate manner gradually modified the claims in view of certain other applications he has pending and certain prior art developed by the Office until the present claims were written which adequately cover one phase of the applicant's invention.

Other new claims have been drawn broadly to the returning of the reflux condensate with or without raw oil under pump pressure to the cracking zone. The claims cannot be rejected on the applicant's own patent because the invention defined thereby is not claimed in the patent. The present application is obviously a divisional application of the patent as to all common divisible subject matter shown but not claimed in the patent, because it was filed long before the patent issued and in fact before the application that eventuated in the patent was filed.

The Examiner's attention is respectfully called to the fact that each and every claim now before him includes the specific process as defined by broader claims 1, 2, 3, 7, 8 and 9 of his patent, plus additional new steps properly not claimed in this patent and which steps possess great merit, as evidenced by affidavits. In other words, in the claims now before the Examiner, all the steps embodied in these broader claims of the patent have been included and in addition to these steps certain specific improved steps defining a divisible invention have also been included, the utility and novelty of which steps in this com-

bination cannot be denied. The claims in each instance are more specific than the claims referred to in the patent. Certain of the claims add to the process defined in such claims new and additional steps which could not properly have been claimed in the patent. The claims when con-

53

3920 sidered as a whole, define a process essentially patentable over the process claimed in the patent, although said claims do include among other valuable and inventive steps each and every step included in the broader claims in the patent, which claims are obviously patentable. If the Examiner does not think that the applicant has a right to make these claims, if he does not think that they are readable on his disclosure, or if for any other reasons he thinks they should not be included in this application, he is respectfully asked to fully state his grounds of rejection, and to make the action final so that an appeal can be taken.

During a recent interview it was suggested by the Examiner that the applicant had no right to make a number of the claims at this time and it was understood that he was principally opposed to the claims because of the applicant's right to present such claims at this date. It was believed that this was his real reason for refusing to allow the claims before him, as no suggestion was made that such claims could be properly rejected for other reasons. If the Examiner still adheres to this position he is respectfully asked to fully state why he believes the applicant cannot at this time make the claims in this application. Then again, he is also asked to fully apply any other reasons he has affecting in any way the applicant's disclosure, the operativeness of the process, etc. The applicant would like at this time to have a full statement of the position of the Examiner, and he can conclude this rejection with a final action if he does not believe the claims are allowable.

The question of double patenting is not present in this application. The first group of claims calling for the two streams, each under pressure, could not have been made in the applicant's patent. The subject matter claimed was not disclosed. The other claims cover a species of the invention clearly divisible from the invention as claimed

54

3921 in the patent. Said claims therefore define an invention which could not properly have been claimed in the patent. They are not broader than the claims in the patent, but generally include the exact process covered by the patent, plus the added and meritorious steps herein described. It is not, therefore, a case where an applicant is guilty of double patenting, because of the issuance of a specific patent first, and then later a broader patent to perpetuate his monopoly.

The last three claims have been presented in view of a personal interview with the Primary Examiner wherein he stated that such claims were allowable. The claims include the idea of maintaining the accumulated body of reflux oil to be constantly fed to the pump. In other words, they include the steps recited in the other claims, plus the idea of maintaining the reservoir of reflux oil above the pump entrance so as to provide a constant feed and to prevent gases and the like from entering the pump so as to disturb pressure conditions in the system. These claims the Examiner stated in his judgment were allowable.

The application is now obtaining certain affidavits as to the merit of the present invention. These affidavits will show the increased efficiency resulting in the use of the process embodying the feeding of the oil streams under forced pressure as claimed. They are being filed to demonstrate the utility of this invention and its advantages in comparison with the invention specifically claimed in the applicant's own prior patent claiming a head pressure for feeding reflux. These affidavits will probably be filed before the Examiner reaches the application for final action as it is desired that they be incorporated in the record before an appeal is taken, if such a course is necessary.

Respectfully submitted,

C. P. Dubbs,

By Charles M. Thomas,

Attorney.

July 16, 1924.

55

3922 (Stamps) Application Div. Sep 3 1924 U. S. Patent Office.

Paper No. 13.
Sep. 4 1924
Division 31

IN THE UNITED STATES PATENT OFFICE

Div. 31, Room 169
Carbon P. Dubbs
Process of Cracking Hydrocarbons

Filed Dec. 12, 1918
Serial No. 266396

Hon. Commissioner of Patents,

Sir:

Please amend the above entitled application as follows:

Claim 9, line 13, change "cracking" to —heating—

Claim 10, line 13, change "cracking" to —heating—

Claim 11, line 7, change "cracking" to —heating—

Claim 12, lines 3 and 8, insert —heating— before "zone" and "coil" respectively.

Claim 13, line 9, change "cracking" to —heating—

Claim 14, lines 8 and 10, change "cracking" to —heating—

Claim 15, line 3, change "cracking" to —heating—; line 10, change "cracking" to —heating—; line 12, change "cracking zone" to —heating tubes—; line 13, change "cracking" to —heating—;

Claim 16, lines 8 and 10, change "cracking" to —heating—

56

3923 Claim 17, lines 8 and 10, change "cracking" to —heating—

Claim 18, line 9, change "cracking coil" to —enlongated passageway—; line 13, change "cracking" to —elongated passageway—

REMARKS:

Attached hereto please find an affidavit of the applicant showing the fact that he actually, among other runs, operated the process claimed at the time specified.

Respectfully submitted,
Carbon P. Dubbs,
By Charles M. Thomas,
Attorney.

September 2, 1924.

57

3924 (Stamp) Application Div. Sep 3 1924 U. S. Patent Office.

AFFIDAVIT OF CARBON P. DUBBS.

State of Illinois, } ss.
County of Cook. }

Carbon P. Dubbs being first duly sworn, deposes and says that he is the applicant in the matter of application Serial No. 266,396 filed December 12th, 1918 in the United States Patent Office, relating to a Process for Cracking Hydrocarbon Oils, which application among other things, discloses a process where a stream of oil is continuously forced through a feeding line 10 to a series of heating tubes 6 where it receives its cracking heat, and is then transferred to a series of distilling or reacting tubes 7 of an enlarged diameter where vaporization and conversion of the oil occurs, both zones being under a superatomospheric pressure. From the latter zone the vapors pass to an aerial condenser where the heavier insufficiently cracked vapors are condensed, the condensate collecting in a liquid body, from where it may be forced under mechanical pressure by the pump 43 through a line 41 to the inlet side of the heating coil. In this process it is vital that residual oil in the enlarged distilling coil 7 be continuously withdrawn without permitting the same to again enter the heating zone, or to again mix with the reflux oil that is to pass to said heating zone for further cracking.

Deponent states that during the month of September in the year 1918, he successfully operated the process afore-

58

3925 said in an apparatus substantially resembling the apparatus disclosed in this application in the Town of Indepence in the State of Kansas, utilizing in said apparatus a series of heating coils of four inch diameter communicating with large ten inch expansion tubes where the substantially liquid oil at a cracking temperature underwent conversion and vaporization. From this line residual oil was continuously discharged and charging stock was also continuously admitted to the inlet of the cracking coil. The discharged residual oil was never permitted to again enter the stream. The vapors passed to an aerial condenser to separate the heavier insufficiently cracked vapors from the gasoline-like products, the condensate being introduced to the inlet of a power driven pump having a driving motor connected therewith, that the said pump forced the reflux condensate free of residual oil continuously under a high pressure through the four inch heating coil together with charging stock admitted in a separate stream under pressure to the inlet of the coil.

Deponent states that in this process the rapidly moving stream of reflux condensate often represents in excess of .6 of the charging stock passing through the heating tubes, and that by feeding the same in the coil under a forced mechanical pressure it is rapidly cycled through the stream, overcoming frictional resistance offered by the oil and vapors in the heating tubes, also preventing reflux condensate from backing up in the aerial condenser due to fluctuations in heat and pressure, the rate of heat and feed, and other conditions beyond the operator's control, which accumulation of reflux condensate in the aerial condenser contaminates the vapors and destroys in part the condensing effect of the condenser and backs into the oil vapor transfer line where it often is again vaporized,

59

3926 causing carbon deposits in this line.

Deponent states that in the run herein referred to and carried out at Independence, Kansas, he utilized for pumping the reflux condensate, a pump manufactured by the English Tool & Supply Company, of Kansas City, Missouri, which pump purchased by deponent's assignees in the year 1917, and which pump is still in said assignees' possession and capable of further use.

Deponent states that in the run specified, he used a California gas oil as a charging stock, which he heated

during said run to approximately a uniform temperature of 840° F. when transferred from the heating tubes to the conversion tubes, that the vapors from the conversion tubes were introduced to an aerial condenser, the liquid condensate produced in said condenser approximating a temperature during said run of 670° F., and that the entire system was maintained under a pressure of approximately 125 pounds per square inch.

Deponent states that during this run he obtained a gasoline yield of approximately 25% of the charging stock, and that the run referred to was carried on continuously for a period in excess of three days, that the same was successful in every respect, that the pump operated most efficiently and offered no mechanical difficulties, and that at the end of the run the pump was in perfect condition and successfully operating.

Deponent further states that at the end of the run with the use of the pump there was a noticeable absence of carbon in the heating tubes which he attributed to the definite control of cycling of the reflux oil with the charging stock through the apparatus, and that also no contamination of vapors occurred, nor a coking of the vapor transfer line, all of which are objectionable features which often appear in processes where the reflux is forced

60

3927 through the transfer line under a head pressure only.

Deponent further attaches hereto as Exhibit "A" a reproduction of a drawing disclosing the apparatus herein described, in which this process was carried out, the original of which was made at the time of said run and forms a part of the record of said run kept by deponent's assignees, that the run was witnessed by many others, and that the figures appearing in this affidavit were obtained from records made immediately after the run, and that since this date he has conducted many runs utilizing this process where the reflux is forced through the heating tube by mechanical pressure applying device.

Further deponent saith not.

Carbon P. Dubbs.

Subscribed and Sworn to before me this 26th day of August, 1924.

Marie V. Largerstadt,
Notary Public.

(Seal)

61

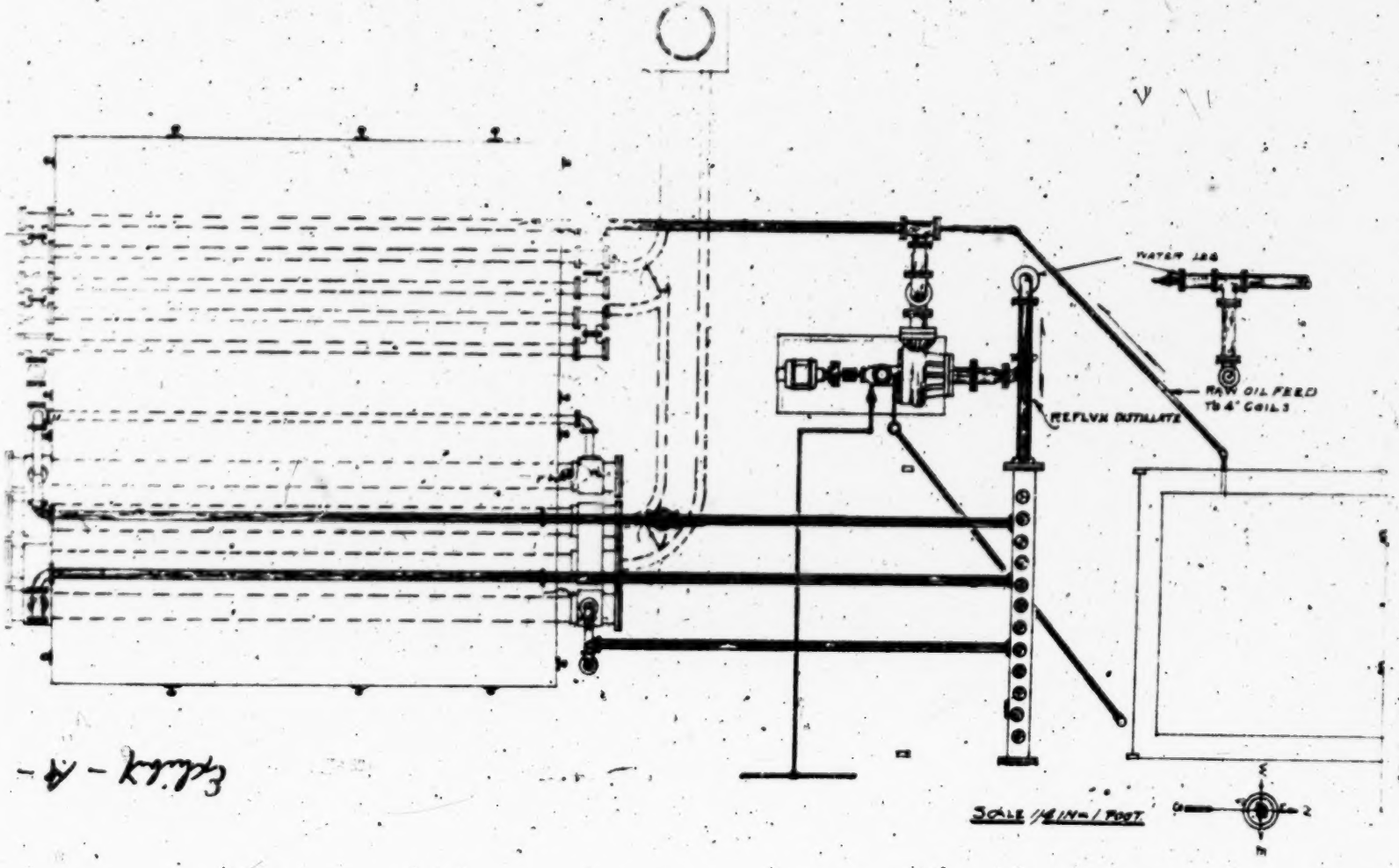


Plate 123

Plate - A -

3929 Div. 31 Room 314 Paper No. 14

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

CSD/NH

(Stamp) Patent Office Sep 9 1924 Mailed.

DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington.

Bacon & Thomas,
916 G St. N. W.,
Washington, D. C.

Please find below a communication from the Examiner in charge of the application of Carbon P. Dubbs, filed Dec. 12, 1918, Serial #266,396 Process and apparatus for cracking hydrocarbon oils.

Thomas E. Robertson,
Commissioner of Patents.

Amendment filed Sept. 3, 1924 is of record.

Claims 1, 2 and 3 and claims 11, 12, 13, 14, 15, 16 and 17 are rejected on Dubbs 1,392,629 of record on the ground of double patenting.

In claims 1 and 3, the statement that the receiver holding the bulk supply of condensate is elevated above the entrance to the cracking zone is a mere apparatus limitation which is insufficient to render a process claim patentable over the reference. At any rate in Dubbs 1,392,629 the condensate receiver L extends vertically a considerable distance above the entrance to the cracking zone.

Claims 11, 12, 13, 14 and 15 are further rejected as unwarranted in reciting prevention of substantial vaporization in the heating zone. No statement to this effect is found in the specification.

Claims 5, 6, 7, 9 and 10 are rejected as unwarranted in reciting the prevention of vaporization, or, the maintenance of the oil in the heating tubes in liquid phase.

Claim 4, line 8; claim 6, line 8; claim 7, lines 10 and 11; claim 8, lines 7 and 8; claim 9, line 8; claim 10, line 8; and claim 18, line 8 are inapt in such expressions as

63

3930 "reflux condensate free of residuum from said dephlegmator," and are accordingly rejected. This rejection could be overcome, taking Claim 4, as and example, by canceling "free of residuum", so that the claim will read "reflux condensate from said dephlegmator". As at present constituted these claims are misleading in that they would imply that there was a certain residual portion of the oil in the dephlegmator which was not returned to the coils. It is pointed out that the cancellation of "free of residuum" or equivalent expression from these claims will improve by the form by avoiding repetition since the removal of residuum is recited as a separate step in each of this group of claims.

Claim 5, line 9, cancel "free of residuum". As at present constituted, claim 5 is rejected as inapt and indefinite in line 9.

Properly amended to overcome the rejections on the ground of being unwarranted and inapt, claims 4, 5, & 6, 7, 8, 9, 10 and 18 would be allowable as advised.

But it is believed that there is an undue multiplicity of claims and claims 5, 9 and 10 are accordingly further rejected as unpatentable over claim 4.

Claim 10 is further rejected as unpatentable over claim 9.

Due to the age of this case, the above action may be considered final at the option of the applicant, and appeal be taken without further formality.

C. S. D.

C. W. Levinson,
Act Examiner.

64

3931

Paper No. 15
Sep 20 1924
Division 31.

(Stamp) Application Div. Sep 19 1924 U. S. Patent Office.

IN THE UNITED STATES PATENT OFFICE

Div. 31, Room 314,

Carbon P. Dubbs,

Process and Apparatus for
Cracking Hydrocarbon Oils,

Filed Dec. 12, 1918,
Serial No. 266396.

Hon. Commissioner of Patents,

Sir:

In response to the office letter of September 9th, 1924, and to place the application in condition for appeal, the notice of which is being filed with this amendment the following amendments are made:

Strike out claims 1, 2 and 3, and substitute therefor the following:

H[1] ~~1. A process of converting heavy into lighter hydrocarbons, consisting in passing a stream of hydrocarbon oil through a zone where said oil is heated to a cracking temperature, in passing the oil thence to and through an enlarged zone where conversion occurs, removing the vapors, subjecting them to reflux condensation, returning reflux condensate without permitting the same to intermingle with a bulk supply of charging stock under a mechanical pressure~~

Per M ~~to the heating zone for further treatment, in preventing an~~

intermingling of any residue from said enlarged conversion
zone with the oil in the heating zone, and in maintaining a
pressure on the material during conversion in said heating and
conversion zones.

65

3932 2. A process of converting heavy into lighter hydrocarbons, consisting in passing a stream of oil
through a coil in a heating zone where said oil is heated to
a cracking temperature, in transferring the highly heated
oil to an enlarged zone where vaporization of a substantial
portion thereof occurs, in passing the vapors to a dephlegmator,
in introducing reflux condensate from said dephlegmator,
without permitting said condensate to intermingle with a bulk
supply of charging stock to pressure applying means to be
forced under pressure through the coils in the heating zone,
in removing residue from said conversion zone without permitting
intermingling of any substantial portion thereof with the oil in
the heating coil, and in maintaining a superatmospheric pressure
on said oil undergoing conversion.

3. A process for converting heavy into lighter hydrocarbons, consisting in passing in an advancing
direction a stream of oil in a coil through a heating zone
where said oil is heated to a cracking temperature, in transferring
the highly heated oil to an enlarged chamber where conversion

~~thereof occurs, in passing generated vapors to a reflux condenser, in returning reflux condensate without being permitted to intermingle with a bulk supply of charging stock under a forced mechanical pressure to said heating coil, in preventing a return of residual oil from said conversion chamber to the heating coil, and in maintaining a superatmospheric pressure on the oil undergoing conversion in said system.~~

Per M

Insert E[1]

The three new claims substituted in lieu of claims 1 to 3 are directly along the lines of claims previously considered by the Examiner, being in each instance limited to applicant's process embodying the step of forcing the reflux

66

3933 condensate under a forced pressure through the coil.

They differ from the other claims before the Examiner in that they distinctly recite a process where this reflux condensate is returned without being permitted to intermingle in a reservoir with a bulk supply of oil. The applicant is assuming that these claims will be rejected on the same grounds as the other claims in the record, and for that reason has filed an appeal at this time in order to avoid delays.

Claim 4, line 8, cancel "free of residuum". Same claim, line 9, change "raw oil" to charging stock.

Claim 5, line 4, cancel "but substantial conversion prevented". Same claim, line 9, cancel "free of residuum".

Claim 6, line 4, cancel "without substantially vaporizing said oil". Line 8, cancel "free of residual oil".

Claim 7, line 4, cancel "but without substantially vaporizing". Same claim, line 9 (10) cancel "free of residual oil".

Claim 8, line 8, cancel "free from residual oil".

Claim 8, line 8, cancel "raw".

Claim 9, line 4, cancel "while substantially in a liquid

phase". Line 8, cancel "free of residual oil. Same claim, line 8, cancel "raw".

Claim 10, line 4, cancel "while substantially in a liquid phase". Same claim, line 8, cancel "raw". Same claim, line 8, cancel "free of residual oil".

Claim 11, line 3, before "zone" insert |coil in a heating|. Same claim, line 4, cancel "but without substantial vaporization".

67

3934 Claim 12, line 4, cancel "but substantial vaporization prevented".

Claim 13, line 4, cancel "but substantial vaporization prevented".

Claim 14, line 4, cancel "but *(WITHOUT) substantial vaporization ~~prevented~~".

Claim 15, line 4, cancel "but substantial vaporization prevented.

Claim 16, line 8, after "coil" insert —with the advancing stream of charging stock passing therethrough—.

Claim 18, line 10, cancel "raw oil" and insert —charging stock—. Same claim, line 9, change "raw oil" to —charging stock—.

Kindly add the following claim:

H² *(10.) ~~10.~~ A continuous process for cracking hydrocarbons consisting in passing the same in an advancing direction in a stream through a heating coil to be subjected to a cracking temperature, in transferring the oil to a reaction zone where vaporization of a substantial portion thereof occurs, taking off the vapors and subjecting them to a

Per N reflux condensing action, in passing reflux condensate ~~with~~ *(AND)

" N charging stock in ~~a~~ stream*(S), ~~both~~ *(EACH) moving under *(SEPARATELY) ~~an~~ applied mechanical

* Matter in parentheses inserted.

Per J pressure *(TO THE INLET SIDE OF SAID COIL), in withdrawing residue from said *(REACTION) ~~expansion~~ zone

" N *(AND UNITING SAID STREAMS FOR ADMISSION)
without permitting intermingling of any portion thereof with
the oil entering the heating coil, and in maintaining a super-
atmospheric pressure in said system.

All of the foregoing amendments have been made to relieve the claims of certain matter objected to by the Examiner. In removing the phrase "without substantial vaporization" from the claims, the applicant does not 68
3935 acquiesce in the ruling of the Examiner that there is no basis for this statement. The specification repeatedly refers to the transfer of heated oil and oil is naturally a liquid substance. The changes are made, however, without prejudice because the applicant finds that it is possible to eliminate this statement from the claims without affecting the scope thereof. The other amendment that has been made to a number of the claims relates to the cancellation of the statement "free of residual oil" referring to the reflux condensate. This was perhaps superfluous, but the claims must be construed as meaning that the reflux condensate that is recracked is not substantially burned with carbon containing residual oil.

The Examiner has also questioned the patentability of claims 5, 9 and 10 over claim 4. Claim 5 differs from claim 4 in that it is limited to a process having the following steps,—"in continuously charging said heating coil with reflux condensate". It further contains the limitation,—"by feeding such reflux condensate and charging stock in separate continuously moving streams".

Claim 4 does not contain the feature of continuously advancing the reflux oil or the raw oil and the reflux oil. It therefore clearly distinguishes from claim 4.

Claim 9 is patentably different from claim 4, principally because it specifically points out the following,—

"in advancing the reflux condensate and residual oil from said condenser and raw charging stock from a

---

* Matter in parentheses inserted.

source of supply in separately moving bodies • • • in substantially continuously withdrawing residuum".

In claim 4 the reflux oil and the charging stock is referred to as moving in streams. Streams may not be

69

3936 the equivalent of bodies. Furthermore claim 4 is not limited to the continuous withdrawal of residuum oil.

Claim 10 differs from claim 4 in the same respects, and claims 9 and 10 distinguish from one another in that in claim 10 the pressure is maintained throughout the system described in the claim, while in claim 9 it is maintained on the oil undergoing conversion.

In view of the age of this application the Honorable Examiner is respectfully asked to file an immediate answer to the appeal herewith presented affecting claims 1 to 3, 11, 12, 13, 14, 15, 16 and 17, as the applicant is desirous of obtaining an early hearing in the matter of this application.

It is clear to the applicant that his claims are all patentably distinct. It is hoped that the Examiner will not see fit to adhere to his rejection of certain of the claims as not being patentable over others so that the Board will not be burdened with deciding this question.

The single new claim will clearly speak for itself, and it is asked that this claim be admitted for the purposes of appeal.

Respectfully submitted,
Carbon P. Dubbs;
By Charles M. Thomas,
Attorney.

Sept. 17, 1924.

70

3937 Paper No. 20.

IN THE UNITED STATES PATENT OFFICE.

(Stamps) $10 Rec'd. Sep 19 1924 C. C. U. S. Pat. Office. Docket Division Sep 20 1924 U. S. Patent Office.

Div. 31, Room 314,

Carbon P. Dubbs,

Process and Apparatus for Cracking Hydrocarbon Oils,

Filed Dec. 12, 1918,
Serial No. 266396.

APPEAL TO THE HON. BOARD OF EXAMINERS-IN-CHIEF.

Hon. Commissioner of Patents,

Sir:

Appeal is hereby taken from the action of the Primary Examiner in finally rejecting claims 1 to 3 inclusive, and claims 11, 12, 13, 14, 15, 16, 17 and 19, of the above entitled application, on the applicant's own patent of record on the ground of double patenting.

The appeal fee of $10.00 is attached hereto.

An oral hearing is requested.

Respectfully submitted,
Carbon P. Dubbs,
By Charles M. Thomas,
Bacon & Thomas,
Attorneys.

Sept. 17, 1924.

3970 Paper No. 21.

(Stamp) U. S. Patent Office Examiners-in-Chief Nov. 13, 1924 Copy Mailed.

DECISION.

EGB.
Hearing:
Oct. 15, 1924.

Appeal No. 10,977. U. S. Patent Office. Nov. 13, 1924.

Before the Examiners-in-Chief, on Appeal.

Application of Carbon P. Dubbs for a patent for an improvement in Process of Cracking Hydrocarbon Oils, filed Dec. 12, 1918, Serial No. 266,396.

Mr. Frank L. Belknap and Messrs. Bacon & Thomas, attorneys for appellant.

This is an appeal from the action of the primary examiner finally rejecting claims 1 to 3 inclusive and claims 11, 12, 13, 14, 15, 16, 17 and 19, of which the following will serve as an example:

1. A process of converting heavy into lighter hydrocarbons, consisting in passing a stream of hydrocarbon oil through a zone where said oil is heated to a cracking temperature, in passing the oil thence to and through an enlarged zone where conversion occurs, removing the vapors, subjecting them to reflux condensation, returning reflux condensate without permitting the same to intermingle with a bulk supply of charging stock under a mechanical pressure to the heating zone for further treatment, in preventing an intermingling of any residue from said enlarged conversion zone with the oil in the heating zone, and in maintaining a pressure on the material during conversion in said heating and conversion zone.

104

3971 The reference relied upon is:

Dubbs, 1,392,629, Oct. 4, 1921.

The appealed claims are rejected on the ground of double patenting, the patent relied upon being #1,392,629. That patent relates to a process of converting hydrocarbons, and the particular part thereof with which we are

concerned relates to the manner in which the reflux condensate is returned for further treatment. The charging stock is delivered by a pump J through a pipe J′ to the cracking coils B. The reflux condensate may be delivered to the pipe J′ in either of two ways. The first is by gravity, the condensate flowing down the pipe F′, thence across the furnace where it is delivered to the pipe J′ just in advance of the cracking coils. When returned in this manner, a valve H^5 in the cross pipe F′ is opened, while a valve H^6, shown in Fig. 1, is closed. As an alternative way of returning the reflux condensate, the valve H^5 is closed and the valve H^6 is opened. The condensate then flows into a tank L from which it is drawn by the pump J and is delivered thereby to the pipe J′ along with the fresh stock. In this latter method, the condensate is returned under mechanical pressure.

A consideration of the claims of the patent shows that all of them, with the possible exception of 4 and

105

3972 5, are generic to both methods of returning the condensate. Claims 4 and 5 call for the step of returning the condensate to the stream of oil. It is argued that these claims are limited to the gravity feed since it is only in that method that the condensate is returned to the stream of oil. In the pressure feed method the condensate is passed through the same pipe with the stream of oil, but it is questionable if it can be said that it is delivered to said stream. In any event, no claim of the patent is specifically limited to the mechanical-pressure return.

The appealed claims are all limited to the idea of the use of mechanical pressure for returning the condensate. They are therefore directed to a species of the invention which is distinct from the gravity feed. Being thus limited, and none of the claims of the patent being similarly limited, this is not a technical case of double patenting. The only question, it seems, is whether the mechanical pressure feed is inventive over the gravity feed.

In his brief appellant has set forth many reasons why the mechanical pressure method now claimed is superior to the gravity feed method. Not only is it more economical in the initial cost of equipment, but it produces a better grade of product and produces the same at a more rapid rate. Furthermore, whereas in the gravity feed some con-

106

3973 version may take place in the vapor line, tending to the deposition of carbon therein, this difficulty is entirely obviated by the use of the mechanical method. It is also stated that the company with which applicant is associated has erected many plants using the gravity feed system and also has some plants operating under the mechanical pressure system, and that the superiority of the latter has been ascertained and demonstrated by the operation of these last mentioned plants. It seems that it was not obvious to appellant that the advantages set forth in his brief could be secured by the use of a mechanical pressure system for returning the condensate. We find, therefore, that the invention now claimed is for divisible subject matter from that claimed in the patent and that invention is involved over the gravity feed system.

The appealed claims will therefore be allowed.

At the hearing appellant submitted three new claims for our consideration and possible recommendation. It seems that these claims distinguish from those on appeal, but the difference is such that an additional search probably will be necessary to determine their patentability. We do not believe that we should recommend claims in such a situation and must therefore decline to consider them.

The decision of the examiner is reversed.

S. E. Foute,
E. S. Henry,
Sidney F. Smith,
Examiners-in-Chief.

107

3996 Paper No. 31.

IN THE UNITED STATES PATENT OFFICE.

(Stamp) Application Div. Dec 15 31 U. S. Patent Office.
Application of

Carbon P. Dubbs; for
Process of Cracking
Hydrocarbon Oils;

Filed December 12, 1918;
Serial No. 266,396;
Div. 31, Room 312.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

This application has been involved in Interference No. 52,305 and a divisional application of the instant case Serial No. 6060 filed January 31, 1925 has been involved in a companion interference No. 55,610. To the end that the situation may be somewhat clarified for the Examiner, the following explanation is given,—

At the time Interference No. 52,503 was declared this application contained nineteen (19) allowed claims and was in condition for allowance. (See attached chart.)

Interference No. 52,305 involved two Dubbs applications. This application No. 266,396 was involved as to Counts 10, 11, 12, 13, 14 and 15, which counts corresponded to allowed Claims 4, 5, 6, 8, 9 and 10 of this application No. 266,396. After interference No. 52,305 was declared, this applicant presented the divisional application Serial No. 6060 and in that case he presented eleven (11) claims numbered 1 to 11 inclusive, and corresponding respectively to Claims 1, 2, 3, 11, 12, 13, 14, 15, 16, 17 and 19 of this application No. 266,396.

130

3997 Ultimately a second Interference No. 55,610 was declared on the basis of the divisional case No. 6060. The first eight counts of Interference No. 55,610 corresponded to claims 1 to 8 inclusive of application No. 6060 which in turn corresponded to Claims 1, 2, 3, 11, 12, 13, 14 and 15 of the instant application No. 266,396. Interference

No. 55,610 involved four additional counts 9, 10, 11 and 12 but these were suggested by the Examiner to applicant in application No. 6060 and did not originate in the instant application No. 266,396.

Of the nineteen claims which stood allowed in this application at the time interference No. 52,305 was declared claims corresponding to all but claims 7, 16, 17, 18 and 19 have become counts either in Interference No. 52,305 or No. 55,610. These five claims which were not involved in either interference are directed to the same subject matter as are the claims corresponding to the counts of Interference No. 52,305.

This applicant prevailed in Interference No. 52,305 and was defeated in Interference No. 55,610.

Interference No. 52,305 included claims directed to the specific operation of separately advancing the charging oil and reflux each under mechanical pressure to the heating coil, while the claims involved in Interference No. 55,610 are generic to the return of reflux to the coil under mechanical pressure.

Since this applicant prevailed in Interference No. 52,305 he is entitled not only to the counts of that interference corresponding to claims 4, 5, 6, 8, 9 and 10 of this application No. 266,396 but also to claims directed to the same subjectmatter, namely, Claims 7, 16, 17, 18 and 19 of this application. All other claims of this application, namely, Claims 1, 2, 3, 11, 12, 13, 14 and 15 correspond to counts of Interference No. 55,610 i. e., counts 1 to 8 thereof as to

131

3998 which this applicant was unsuccessful. Accordingly this group of claims is being canceiled, so that this application will contain ~~only claims to~~ the subject matter as to which the applicant prevailed in Interference No. 52,305, namely, the specific operation of separately advancing the charging oil and reflux condensate under mechanical pressure to the heating coil.

With this explanation the following amendment is made:

Please cancel Claims 1, 2, 3, 11, 12, 13, 14 and 15.

REMARKS.

This amendment places this application in condition for allowance, since the retained claims all have an allowed status and are directed to the subject matter as to which applicant prevailed in Interference No. 52,305.

To facilitate the Examiner's consideration of this case a chart is attached hereto showing the relationship of claims of this application No. 266,396 to Interference No. 52,305, divisional application No. 6060 and Interference No. 55,610.

The Examiner will note that claims 16, 17 and 19 of this case No. 266,396 were presented as claims 9, 10 and 11 of divisional application No. 6060. This should not have been done because these claims correspond in subject matter to the counts of Interference No. 52,305. Accordingly an amendment is being filed in application No. 6060 cancelling claims 9, 10 and 11 therefrom.

Respectfully submitted,

C. P. Dubbs,

By Charles M. Thomas,

Asso. Attorney for Applicant.

Dec. 15/31

132

3999 Dubbs Appln. #266,396	Interf. #52,305	Dubbs Appln. #6060	Interf. #55,610
1		1	1
2		2	2
3		3	3
4	10		
5	11		
6	12		
7	Not involved in Intf. Corresponds in subject matter to Counts of #52,305.		
8	13		
9	14		
10	15		
11		4	4
12		5	5
13		6	6
14		7	7
15		8	8
16	Not Involved in Intf. Correspond in Subject Matter to Counts of #52,305	9	
17		10	
18			
19			
		11	
Suggested by Examiner		12	9
		13	10
		14	11
		15	12

133

4003 Address Only
The Commissioner of Patents
Washington, D. C.

Serial No. 266,396

Div. JP

DEPARTMENT OF COMMERCE

United States Patent Office

Washington

January 23, 1932

Carbon P. Dubbs
Assor etc.

Your Application for a patent for an Improvement in Process of Cracking Hydrocarbon oils filed Dec. 12, 1918 has been examined and Allowed with 10 claims.

The final fee, Twenty-five Dollars, With $1 Additional for Each Claim Allowed in Excess of 20, must be paid not later than Six Months from the date of this present notice of allowance. If the final fee be not paid within that period, the patent will be withheld, but the application may be renewed within one year after the date of the original notice with a renewal fee of $25 and $1 additional for each claim in excess of 20.

The office delivers patents upon the day of their date, on which date their term begins to run. The preparation of the patent for final signing and sealing will require about four weeks, and such work will not be begun until after payment of the necessary final fee.

When the final fee is paid, there should also be sent, Distinctly and Plainly Written, the name of the Inventor, Title of the Invention, and Serial Number as Above Given, Date of Allowance (which is the date of this circular), Date of Filing, and, if assigned, the Names of the Assignees.

If it is desired to have the patent issue to an Assignee or Assignees, an assignment containing a Request to that effect, together with the Fee for recording the same, must be filed in this office on or before the date of payment of the final fee.

After issue of the patent, uncertified copies of the drawings and specifications may be purchased at the price of Ten Cents Each. The money should accompany the order. Postage stamps will not be received.

The final fee will Not be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

Notice.—When the Number of Claims Allowed Is in Excess of 20, No Sum Less Than $25 Plus $1 Additional for Each Claim in Excess of Twenty Can Be Accepted as the Final Fee.

Respectfully,
Thomas E. Robertson,
Commissioner of Patents.

Frank L. Belknap
First National Bank Bldg.
Chicago, Ill.

(In left-hand margin.) ☞In Remitting the Final Fee Give the Serial Number at the Head of This Notice.

(In right-hand margin.) ☞Uncertified Checks Will Not Be Accepted.

137

4017 DX 208.

File No. 2

Intercompany Correspondence

(Containing Pages 38 to 90, Inc.)

4018 Port Arthur, Texas July 6, 1927.

(Stamp) Received Jul 11 1927 Referred to HTR DHM D.

Personal & Confidential
Mr. L. R. Holmes,
New York City, N. Y.

Dear Sir:

Referring to letter attached, with reference to Beheimer's interview with R. L. Murray:

I had an opportunity to discuss fully with Beheimer this morning, his conference with R. L. Murray. Beheimer stated that he arrived in Port Arthur, Saturday, July 2nd, shortly afternoon, and was advised by Mrs. Beheimer

that R. L. Murray had called for him a number of times during his absence from the city, and in fact, before asking for Mr. Beheimer, Murray had called Mrs. Beheimer, requesting an interview with her at his office, on very important matters.

According to Beheimer's statement to me, Mrs. Beheimer did not tell Beheimer about her interview with R. L. Murray until Murray called him at his residence, Sunday morning, July 3rd, and after finishing 'phone 4019 conversation with Murray, agreeing to an interview at 10:00 A. M. Sunday morning July 3rd, in Murray's office.

Mr. Beheimer stated that after making the above appointment with Murray, Mrs. Beheimer advised him that she knew exactly what Murray wanted to see him about. Beheimer then requested Mrs. Beheimer to give him any information she had from Murray, or as to why he was so anxious for an interview with him. Mrs. Beheimer then told Beheimer that during the latter part of June, R. L. Murray called her and asked if she would come to his office to talk over some special business, and upon her arrival to Murray's office, she found him to be very nervous. Murray apparently started his conversation by talking over some of their old business, which I suppose was the Beheimer Divorce Case, and Murray then informed Mrs. Beheimer that he no longer was working for The Texas Company, which eventually led up to Mr. Beheimer's work at the plant, inquiring as to what knowledge she had of any past statements Mr. Beheimer had made with 4020 reference to his work, also made inquiries as to whether or not Beheimer was thoroughly satisfied with his present position and treatment. Beheimer said that Mrs. Beheimer was very much offended to think that R. L. Murray wanted to talk to her regarding Mr. Beheimer's work, and immediately left Murray's office.

Beheimer stated that he kept his appointment with Murray and upon his arrival at Murray's office, Murray stated to Beheimer that he was very glad to see him, and after discussing a few personal matters Murray advised Beheimer that he was on the "fence" as both The Texas Company and Universal people were endeavoring to retain him for special work, however, so far, he had not accepted either position, but naturally the one that made the best offer would get him.

R. L. Murray then asked Behimer if he would do him a

favor, and Beheimer informed Murray that it all depended what the favor would be. Murray then told Beheimer
4021 that he had given The Texas Company two affidavits pertaining to old experimental work on the Holmes-Manley Pressure Stills and that Mr. Donaldson had promised him a copy of each of these affidavits, but so far had failed to receive copy of either affidavit, therefore, was very anxious to know the exact dates of each affidavit. Beheimer was not positive, but believed that Murray stated during their conversation that he also had given the Universal Oil Products Company an affidavit. Beheimer advised Murray that it would not be right for him to furnish him any information with reference to affidavits, and in fact, all affidavits were in the hands of lawyers, and that further, he would not discuss affidavits or experimental work, and after passing a few friendly words with Murray, left and went to the plant.

While discussing this matter with Beheimer he requested that I make no mention of Mrs. Beheimer's interview with R. L. Murray, as he did not want her connected in any way in regards to this matter, so in case this matter is discussed with Beheimer, I hope no mention will be made with reference to Mrs. Beheimer's interview with Murray.

4022 Beheimer apparently is very friendly towards me and will give me all information in connection with this matter, in case R. L. Murray attempts any further interviews with Mrs. Beheimer. I am also endeavoring to make Mrs. Beheimer's friendship.

Yours very truly,
Signed: T. G. Dellinger.

TGD-ELG
WSSR PCS RJD from LRH 7/11/27

4023 Port Arthur, Texas. July 5, 1927.

Personal & Confidential
Mr. L. R. Holmes,
New York City.

Dear Sir:

On my return to Port Arthur, Friday, July 1st, I was advised by Mr. Stratford that R. L. Murray was very anxious to get in touch with Mr. Otto Beheimer. Stratford

apparently is very friendly with R. L. Murray and has been handling all matters pertaining to this case with him. I advised Stratford to get in touch with Mr. Beheimer upon his immediate return from Houston and inform him that R. L. Murray was very anxious to get in touch with him.

Mr. Beheimer returned from Houston Saturday, July 2nd, and Stratford failed to get in touch with him Saturday or Sunday, and in discussing this matter with Stratford this morning, he advised me that R. L. Murray had already succeeded in getting in touch with Mr. Beheimer,
and in fact, talked to him in his office Sunday morn-
4024 ing, July 3. Stratford further informed me that Beheimer told him this morning that R. L. Murray asked questions pertaining to Experiment #8 and that Murray was very much upset because he had signed an affidavit for The Texas Company, and was apparently endeavoring to get the approximate dates shown on his affidavit, which leads me to believe that R. L. Murray is now connected with the Universal people. Stratford is also of the same opinion.

I talked to H. A. Pond, Paul Terrier, Livergood and N. T. Fuller this morning, advising them that in all probability they would be approached within the next few days by R. L. Murray.

Pond advised me during our discussion, that a few days ago, he had business in Dr. Johnson's office, which is located near R. L. Murray's office, and that Murray called him in his office stating that in all probability they would get a good long trip within a short time to discuss all experimental work, which indicates at this time, that R. L. Murray was not sure of his position with the Uni-
versal people, but was merely feeling Pond out. Mur-
4025 ray also asked Pond what he thought of making this trip, and Pond advised that he would be glad to make the trip. Pond, of course, was of the opinion that R. L. Murray was still connected with The Texas Company.

I have been assured by all of the above men that they will absolutely refuse to talk to R. L. Murray, and if they were approached by 'phone or in person, that they will advise me immediately.

I had a long talk with E. R. Litchfield, local contractor in Port Arthur, Saturday and Sunday, and Litchfield advised me that he was positive that R. L. Murray was employed by the Universal people and that his duties were

to approach Otto Beheimer, H. A. Pond, Paul Terrier, Mike Becker, N. T. Fuller, George White and all other parties that were familiar with past experimental work.

Litchfield is due in my office at noon today and has agreed to give us an affidavit covering his activities in connection with the Universal people, which will be mailed to you upon completion.

Yours very truly,
Signed: T. G. Dellinger.

TGD-ELG
WSSR PCS RJD from LRM 7/11/27

4026 Port Arthur, Texas. July 20, 1927.

(Stamp) Received Jul 29 1927 Referred to DHR DPD D.

Personal & Confidential
Mr. L. R. Holmes,
New York City.

Dear Sir:

I suppose W. K. Holmes advised you since his arrival in New York that R. L. Murray has again approached Beheimer for the purpose of discussing old experimental work in connection with Pressure Stills.

I had a long talk with Beheimer on my return from Louisiana, and he advised me that Murray came out to his house for the purpose of discussing this matter, informing Beheimer that while there was very little difference in the proposition offered by The Texas Company and that offered by the Universal people, he had accepted the Universal's proposition, stating that his reason for accepting their proposition was due to the fact that he would be used to some extent in the case, which would give him considerable experience in legal problems, and, fur-
4027 ther, he would come in contact and become acquainted with a number of the big lawyers of the country, which should benefit him a great deal more than if he had accepted The Texas Company's offer and remained in Port Arthur, only handling local problems.

Mr. Murray informed Beheimer that he had been requested by Mr. Dubbs to interview him, and make him an offer, stating that the sum Mr. Dubbs would pay him, Beheimer, was in large figures and that he was not used

to discussing or referring to such amounts. I gathered from my conversation with Beheimer that they offered him a bonus well over $100,000.00, this in addition to a very fancy salary.

Murray further informed Beheimer that the reason Mr. Dubbs was so anxious to employ him was because he, Dubbs, had a number of important problems on Cracking Processes that he wanted developed and was very anxious for Beheimer to take over all experimental work in this connection.

Beheimer stated that he only talked with Murray a
4028 short time with reference to experimental work on cracking processes, informing Murray that he was not in position to discuss such matters, and, further, did not care to see him anymore in this connection.

Yours very truly,
Signed: T. G. Dellinger.

TGD-ELG
WSSR PCS RJD from LRH 7-26-27

4029 Port Arthur, Texas. July 29, 1927.

(Stamp) Received Aug 1 1927 Referred to D DHM WTD.

Personal & Confidential
Mr. L. R. Holmes,
Houston, Texas.

Dear Sir:

While we were in Houston last week going over operations of Crown Central Batteries, Behimer was present at the conference on Saturday, July 23, and advised me that Mrs. Behimer called him from Port Arthur about 5:00 A. M. Saturday, informing him that she had received a letter from his father in Harlingen, Texas, who was ill and requesting that he report home immediately. Mrs. Behimer came over to Houston on the early morning train and she and Behimer left Houston around noon Saturday for Harlingen, Texas.

Behimer returned from Houston yesterday, July 28th, and I was talking to him this morning, and he informed me that upon his arrival in Harlingen, he found his father getting along very nicely and that the reason his father

was so anxious for him to report to Harlingen im-
4030 mediately was that he had come in contact with a man by the name of Kerr, a repreesntative of the Universal Oil Products Company. Kerr evidently came in contact with a man by the name of Compton who is president of one of the banks in Harlingen, Texas, and well acquainted with Mr. Behimer, Junior. As I understand from Behimer, Kerr met Compton some place in Oklahoma and arranged for Compton to have Behimer come to Harlingen through Behimer's father for an interview. However, on Behimer's arrival in Harlingen, Mr. Kerr had left for Chicago, and I judge from Behimer's conversation that he discussed matters briefly with Compton and his father. Behimer informed me that he was, of course, familiar with their wishes and did not discuss any matters of interest, and further advised Compton and his father that he did not have any desire to meet Mr. Kerr which was suggested by Mr. Compton at a later date.

Behimer advised me that his father insisted that he
meet Kerr and Compton at a later date, as suggested
4031 by Compton, and I judge from Behimer's conversation, that both his father and mother have considerable influence over him, however, he advised his parents that they were not familiar with the situation and were not in position to offer any suggestions or insist upon any conferences.

In discussing the matter with Behimer this morning he promised me that he would not consider an interview at any later date with Kerr or Compton.

The above information, of coutse, indicates that the Universal people are very strong after Behimer and are working not only through Murray, but his wife and parents, to secure his employment.

Yours very truly,

Signed: T. G. Dellinger.

TGD-ELG
WSSR PCS RJD from LRH 8-1-27

4034 Telegram

October 3, 1927

Translation
R J Dearborn,
New York, N. Y.

Received letter from Behimer this morning from the Chicago office of Universal Oil Products Company requesting that we ship to him all his personal belongings from our west side office. See no reason why this should not be done as his personal belongings consist of government patent records, technical books, etc. which I will personally examine before sending to his house at Port Arthur. However, want your approval. Received telegram Saturday from Beyt who is on his vacation resigning his position effective at once. Dellinger left for Beyts home Saturday night to see what he could do with him. Advise quickly your approval or disapproval of getting Behimers personal belongings and delivering to his home.

W K Holmes

PSC-ASA from RJD 10-3-27 (personal and confidential)

Telegram

October 3, 1927

Translation
Will K Holmes,
Port Arthur, Texas

Re telegram no objection to Behimers strictly personal property being delivered to his house. This should not include bound set of volumes of testimony and exhibits in Government suit entitled United States against Standard of Indiana and others. Alston and I suggest accepting Beyts resignation and taking no further action with reference to him. Please keep copies but send me original of all communications received from Behimer or Beyt since they have left.

R J Dearborn

PSC-ASA from RJD (personal and confidential)

4043 Port Arthur, Texas. October 31, 1927.

Personal & Confidential
Mr. T. G. Dellinger,
Main Office.

Dear Sir:

I saw M. S. Beyt on Friday afternoon, October 28th, about 4:40 P. M., in the 1700 block on Houston Avenue, at the time I was leaving The Texas Company. At the intersection of Houston Avenue I turned around and followed him to the 1800 block on Houston Avenue, where he was parked in the middle of the block. I parked along side of Beyt's car and spoke to him, but he did not seem to even want to shake hands with me. I asked Beyt if he had been on his vacation, and he stated that I could call it vacation if I wanted to. Beyt then informed me that he had left The Texas Company and was now employed by the Universal Oil Products Company of Chicago, Illinois, and that he had a better job now than he had ever had in his life before and that the Universal people were treating him royally. I asked Beyt what he meant and he
4044 stated that the Universal had doubled his salary over what The Texas Company was paying him, and since his first trip to Chicago, Mr. Dubbs had sent him to California on two different trips and one trip to Wyoming on an inspection tour, also that he had returned to Port Arthur at the Universal Oil Products Company's expense to dispose of his property and to pack his furniture and ship same to Chicago. Beyt further stated that Mr. Dubbs offered to have his car drove thru the country by a special chauffeur or if he so desired, he could drive thru himself with expenses paid.

Beyt stated that he had seen Otto Behimer and wife; that they both are getting along fine and Behimer was in good health and was looking very prosperous, further that Behimer's salary had been increased to more than double; also that Behimer has a five year contract with the Universal. Beyt stated that he was under a ten year contract with the Universal people with an increase in salary on a percentage basis.

Beyt further stated that a number of former employees of The Texas Company were now in the employ of the

Universal Oil Products Company and that there
4045 were several more from Port Arthur Works that have already agreed to go to work for Mr. Dubbs and that The Texas Company will be surprised when they find out who they are.

Beyt stated that Mr. F. C. Fantz, formerly of The Texas Company, was now in the employ of the Universal Oil Products Company, and on October 16, 1927, Fantz was sent to France, as an agent to sell Dubbs Cracking Process Units and would be gone for at least six months.

Beyt also stated that E. J. Landry is now employed by the Universal people and is Shop Foreman at Riverside, Illinois, in their Experimental Plant, and is well satisfied with his present job.

I asked Beyt when he had arrived in Port Arthur, and he stated that he arrived at 6 P. M. Monday evening. I also asked Beyt if he had driven his Dodge Car thru and he informed me that he had driven his car from Lafayette, Louisiana.

I asked Beyt what he intended to do about his furniture, and he stated that he had already packed it and shipped same to Chicago, Illinois, on Wednesday, October
4046 26th, and he further stated that he had partly packed the furniture on Tuesday, October 25th, 1927.

Beyt also told me that he was in Houston several weeks ago and saw Judge Johns on the street, said that he did not speak to him, but felt like taking a swat at him.

I asked Beyt to come to my home to see me and he stated that he would not have time because he was leaving Saturday, October 29th, or Sunday, October 30th, and that he had an appointment with a man from the plant, and for this reason, he was parked in the 1800 block on Houston Avenue. I then wished Beyt good luck and drove away.

Yours truly,

G. D. White.

GDW-ELG

4058 The Texas Company
W. M. Stratford

(Stamp) Received Nov 9 1927 Referred to DHM WTD.

Port Arthur, Texas, Nov. 5, 1927
D#13,441

Personal
Mr. R. J. Dearborn,
New York City.

Dear Sir:

Thursday evening I saw Buck Murray down town and he asked me to drop into his office about 9 o'clock that night as he had some important business to talk over with me. Thinking that I might find something of interest to us in connection with the Behimer episode, I called at Murray's office at 9 o'clock, where he told me he had a letter from Olsen requesting that he make arrangements for me to talk to him over long distance telephone. Olsen was supposed to be at some address in Brooklyn New York. As I had some friends waiting for me in the car downstairs I objected on the ground that it would take too long to make the connection. I also told Murray that Olsen was wasting his time and that there was no use in my talking to him. Murray laughed and said that he wished I would talk to Olsen as he would get a fee out of it. We talked for a few minutes and it was finally
4059 decided that I would talk to Olsen over long distance the following night at 9 o'clock. Murray mentioned at this time his recent talk with Wm. T. Donaldson and said that he had assured Donaldson that his employment by the Dubbs interests would not in any way change his testimony. About the only other thing of interest mentioned at this time was that he (Murray) was present in Dubbs' office some time ago when Wannack, a former employee, was definitely discharged by Dubbs.

I mentioned this matter to Mr. Dellinger yesterday and he suggested that when I talked to Olsen I try to find out if W. R. Howard had left the Dubbs crowd as he understood that Beyt had given out this information recently in Port Arthur.

I returned to Murray's office last night at 9 o'clock and he immediately put in a station to station call for Olsen.

I did not get the number at the other end of the line. We then sat down and discussed the Behimer incident at considerable length. Murray said that the Dubbs bunch, until he came with them, had always been going on the assumption that no experiment was actually carried out operating the jet pump, but that he had set them right on this. He went on to tell how he had approached Behimer and that Behimer had refused to talk to him at all. However, he had gotten the impression from the conversation that Behimer was not entirely satisfied and had something on his mind. Shortly after this Murray was called
4060 to Chicago for a conference with Messrs. Dubbs, Belknap, and Fleckman(?) whom Murray says is the chief counsel for the Armour interests. Behimer was discussed at this conference and both Belknap and Fleckman advised strongly against any further dealing with him. Apparently Murray was the only one who had any hope of getting Behimer lined up, so finally he and Dubbs set about the job alone. Dubbs wanted to approach Behimer through a friend or business associate but Murray told him that Behimer had neither. After much consideration they finally came to the conclusion that the only person who was really close to Behimer at all was his father, who has a farm in the Rio Grande Valley. They accordingly went to Harlingen Texas and, I should judge, gave Behimer's father some money which got him lined up on Dubbs' side. The elder Behimer was somewhat ill and he wired Otto to come to see him. This was the first conference arranged but before Otto arrived Dubbs was suddenly called back to Chicago on business. Accordingly nothing was said to Otto as to the real object in calling him, the elder Behimer merely saying that he wanted to talk to him. Some time later Dubbs and Murray again went to Harlingen and everything was arranged. Otto was called again by his father, and Murray insists that he had nothing in mind about leaving The Texas Company on the day that he left Port Arthur for Harlingen, which was, I believe, about August 12th. We did not get a chance to go into detail on the persuasions brought to bear
4061 on Behimer at the conference but Murray stated that the matter of money was the least important consideration. He said that what really swung the deal was the fact that they were able to show Behimer that Messrs. R. C. Holmes and F. T. Manley were getting royalties from the licensees of Holmes-Manley units. Murray said

that Dubbs had a good laugh about this later as he stated that the royalties thus obtained probably did not amount to much but it was the principle of the thing which made Behimer so angry and this was the turning point in their negotiations. Behimer then wrote a letter of resignation which, I believe, Murray said was taken to Galveston and mailed by one of their operators. It seems that they wanted Behimer to go over the whole situation with them immediately and were afraid that some of our men would be on their trail, making Behimer counter offers, so that they decided to go either to the Pacific Coast or to some place in Canada where they would be uninterrupted. At this time Murray was back in Port Arthur and received a code telegram from Dubbs requesting him to go to Chicago prepared to stay some time and to take his wife if desired. Murray and his wife went to Chicago where they received instructions to go to Los Angeles. The conference with Behimer and others was held in Los Angeles. (I have neglected to state that Murray mentioned Behimer's having signed a contract with Dubbs, although he did not mention anything about the terms of this contract.)

4062 When our discussion had reached this point the telephone rang and Olsen was on the line. Olsen's letter to Murray instructing him to have me talk over long distance had insisted that Murray should leave the room while I was talking. I told Murray it was all right with me if he wanted to stay but he went out. However, I think he stood quite close to the door, which was left ajar. Olsen opened the conversation in his usual manner, asking if I was not beginning to see "the handwriting on the wall". He then went on with his usual line about how they had The Texas Company completely at their mercy and asked me when I was going to get on the "band wagon". I suggested to Olsen that now that they had Behimer, they probably did not need me but he insisted that they thought a great deal of me and that I could make plenty of money by coming in with them, with the usual assurance that no one need ever know about it and it would have no effect upon my present employment. Olsen wanted to come to Port Arthur immediately and close the deal but I assured him it would be a waste of his time so he said that he would be making a trip south some time before Christmas and would talk to me again at that time. The conversation lasted about 10 minutes but details are rather hard to recall. I tried to get Olsen to say just what it was he

wanted but he refused to do this over the telephone. The conversation finally ended by his cautioning me to keep the matter very confidental.

4063 I should have stated in the beginning that in talking with Murray he said something about W. R. Howard having tried to hold the Company up. Recalling what Mr. Dellinger had said about Howard I asked if he was still employed by the Universal Company and Murray said that he was not certain but he understood that Howard and Kauffman had gotten together and, from an exalted opinion of their importance, had tried to hold the Dubbs interests up for a large sum of money and that he understood, as a result, their employment had been terminated. He was not sure about this however.

From the conversation I gathered that there is still some information which is desired which they have been unable to obtain definitely from Behimer. If I have further opportunity I will endeavor to find out what this is.

Yours very truly,

WMS-ER W. M. Stratford.
LHR

4104 DX 209.

The Texas Company
W. M. Stratford

(Stamp) Received Dec 3 1927 Referred to RJD WHM WD D.

Port Arthur, Texas, Dec. 5, 1927.
D#13,441

Mr. R. J. Dearborn,
New York City.

Dear Sir:

Upon my return to my rooms last night (Sunday) about 6 o'clock Raymond L. Murray called me and asked me to stop at his house for a few minutes on my way down town. Murray's house is only about a block from where I live. Upon my arrival at Murray's home I met Sam Olsen, the well-known Dubbs' investigator. Murray, Olsen and I talked and joked about Behimer for a few minutes, after which I told them that I had an engagement and could not stay more than 10 or 15 minutes. Olsen then got down to business, at least what he was using as an excuse, and said that he was authorized to offer me a job with the

Universal Oil Products Company. He said that the Universal was getting a development program under way which would be the most pretentious ever attempted along the lines of investigating cracking operations, that they could use me to good advantage and could afford to pay me two or three times what The Texas Company paid me.

I asked Olsen what it was they wanted from me, as
4105 they presumably had all the "dope" they wanted from Behimer and Beyt. Olsen insisted that they wanted nothing but my services.

We had quite a talk, probably lasting 45 minutes, during most of which time Murray stayed out of the room. Olsen showed me some recent original drawings made by Behimer, and bearing his familiar initials, which illustrated Experiment #8, the high pressure coil preceding Experiment #8, and the Redwood experiment. He said that Beyt and Behimer both had complete copies of all the reports, data, etc., on our early experimental work, and the further discussion of this brought out what I am inclined to believe was Olsen's chief object in seeing me, that is, some records having to do with the operation of Experiment #8.

In discussing the operation of Experiment #8 Olsen said that he understood from Beheimer that the jet pump probably did not work and that the distillate was pretty much the same gravity as the charging stock. However, he said that the running sheets of Experiment #8 which Beyt had turned over to them, were "second photostats", and that a number of the sheets were so blurred as to be illegible. He said that he had been authorized to obtain copies of these sheets and would be paid a certain fee for getting them. After talking in a roundabout manner for a few minutes Olsen finally came out with his proposition, that he would pay me $2000 cash, either for photostat copies of the running sheets on Experiment #8 or for the privilege of making photostat copies himself.
4106 This rather gave me the impression that perhaps Beyt and Behimer were actually unable to produce copies of these running sheets, as I doubt whether it would be worth several thousand dollars for the Universal people to get legible copies of only one or two sheets. From our further conversation I got the impression that probably the Universal's attorneys wanted the running sheets on Experiment #8 to see what really happened as they probably had nothing but Behimer's recollection to

go on. I told Olsen definitely, in Murray's presence, that he had no chance whatever of getting copies of these sheets, which ended the matter. However, in connection with the discussion of Experiment #8, I might mention that Olsen said that Behimer had told them that the present jet pump batteries could only charge about half the amount of the regular batteries and that, even then, a large portion of the backtrap had to be by-passed. Behimer had also told them that the re-production of Experiment #8 was not an exact duplication of the original and had pointed out that the results obtained from the re-production were far better than those obtained from the original.

Among other things of interest Olsen made the statement that Messrs. Holmes and Manley had received a large sum of money for the Holmes-Manley process, either through royalties or in the form of a bonus. I asked him how he happened to know this and he explained that a certain Mr. Mitchell, a large stockholder in The
4107 Texas Company, had married a former Miss Armour who is at the present time the largest stockholder in the Universal Oil Products Company. This practically puts Mitchell in a position of being a director of both companies, and Olsen gave the impression that they were able to obtain any information they desired through this source.

Olsen said that they (Universal Co.) were not doing any more investigating as they now had everything they needed and expressed great confidence that they would win their case, mentioning that they would consider Experiment #8 as an abandoned experiment and that Behimer would testify that he had written to R. C. Holmes pointing out the fact that, for the commercial installation, no means of circulating backtrap to the preheater coil was available. Olsen said that the installation of our first 24 batteries would tend to prove this and said that The Texas Company had never fully realized the importance of the circulation of backtrap until after observing Dubbs' units in operation, after which arrangements for the circulation of backtrap were immediately made. I do not recall anything further of interest which Olsen mentioned. He expected to leave for New Orleans last night and said nothing about coming back this way.

Yours very truly,

WMS-ER W. M. Stratford.
LRH

4108 DX 210.

[The italicized portion of this exhibit was offered and is included in the appeal record under the provisions of Rule 43 (c).]

(Stamp) Received Apr 11 1927 Referred to DHM WJD RJD.

The Texas Company
W. M. Stratford

Port Arthur, Texas, April 7, 1927
D#13,441

Mr. R. J. Dearborn,
New York City.

Dear Sir:

Mr. Olsen, representing the Universal Oil Products Company, called on me last night. We talked about one-half hour, Olsen coming immediately to the point that he wanted a photostat copy of any records and correspondence having to do with our early experimental work on cracking and which are of interest in connection with the pending interferences. Olsen stated that his company had The Texas Company beaten easily but that their attorneys wish to make the matter even more conclusive and accordingly wanted to get everything that they possibly could. He said that he was prepared to make any necessary financial arrangements and would hand me the first $2000 immediately upon my agreeing to work with him. He assured me that I could remain in my present job and draw a good retainer from his company. I of course informed Mr. Olsen that I could not do anything for him and that he was wasting his time.

4110 *Olsen accordingly and tactfully changed the subject then and I spent rather an interesting half hour questioning him on his work. Olsen said that he had been working with Mr. Dubbs since 1919 chiefly on work of this kind, making models among other things. He said that he had made a model of an installation at the Sugar Creek Refinery of the Standard Oil Company and he also mentioned the*

model which he made of the Holmes-Manley unit, which was, I believe, in 1921. I had always understood that Olsen had actually worked in The Texas Company plant at Port Arthur as an employee but he told me that he lived in town and only came into the plant on Sundays, walking through the gate as if he belonged there. He said that on one or two occasions he was stopped but that he had a letter signed by Mr. Nichoson, the employment manager, which he would produce, saying that he had an appointment with Mr. Nichoson. He said that he also had a friend in the Engineering Department who would take him around the Holmes-Manley units on Sunday.

Olsen mentioned Wannack and stated that he had found it necessary to have Wannack discharged as he was entirely incompetent and he spoiled several of his (Olsen's) well laid plans. Olsen stated that he was leaving for the East immediately and suggested that I wire him if I changed my mind or wanted a job. The address which he gave was some number, I believe No. 14, on 77th Street Brooklyn and I understood him to say that I should address him as S. Olsen.

4111 *During our conversation Olsen tried repeatedly to get me to express some opinion of how the pending litigation would come out. He remarked several times that his company would win easily and I noticed that when he made such remarks he always watched me very carefully to see how I would take it. He mentioned the visit of Shefstead and Mackenzie to the Dubbs demonstration unit and said that they got all the information from Dubbs at that time, including the dates of his early work and that thirty days later The Texas Co. filed an application. The general trend of Olsen's conversation indicated that he seemed to believe that our first work along the lines of clean circulation was in connection with Experiment #18 and that he did not believe we had ever conducted any experimental work in 1917. He asked me if it was not a fact that the dates alleged in our preliminary statement were not all lies. However, I refused to commit myself on this matter. Among other interesting things that Olsen said was that their attorneys were assured that The Texas Co. would be afraid to put Behimer on the witness stand at all as Behimer was conscientious and would not lie for The Texas Company, particularly in view of the dirty deal that he had gotten.*

I rather enjoyed talking to Olsen as he was quite an interesting talker and had apparently had a great deal of

experience in his line of work. Toward the end of
4112 *our discussion he came back again to the question of money.* At the beginning Olsen had taken the attitude that The Texas Co. was putting a crooked deal over on the Universal Co. and that I should take it upon myself as a moral duty to straighten the whole thing out. Now he changed his argument and said that we were both working for large corporations both of which were trying to put over a crooked deal on each other and it was merely a question of "dog eat dog". Therefore, why should we (Olsen and myself) not get something out of it. I explained to Olsen that my position was dictated from a consideration of self respect regardless of any issue between corporations and Olsen very tactfully changed the subject again. However, he apparently was not entirely convinced and reminded me that the time was getting short if I was to make any money out of this proposition, from which it was assumed that he referred to the taking of testimony set for the middle of this summer.

I am calling Mr. Dellinger's attention to the presence of Olsen in this vicinity although I think it very likely that he has left by this time.

Yours very truly,
W. M. Stratford.

WMS-ER
LRH

4113 DX 212.

AFFIDAVIT.

State of Texas }
County of Jefferson } ss.

I, Gunther H. Von Brunow, depose and say, that I am a resident of Port Arthur, Texas, married, and of ..... years of age, by trade a mechanic.

Affiant states that he entered the employ of The Texas Company, Port Arthur, Texas about ..... 1918 and went to work at their Port Arthur plant as a machinist and worked under Mr. Fred C. Fantz, then master mechanic for the Texas Company at the Port Arthur plant, and about the year 1920 by the request of the

mechanical engineer, Mr. Davies; was transferred to the construction work on the Holmes-Manley vertical stills and continued at that work until the latter part of 1920 and became fully acquainted with the active work and operation of said Holmes-Manley vertical stills, as the first ones of these vertical stills were in operation about February, 1920, and that affiant frequently discussed the operation with the different men and knows of his own knowledge that all these stills were constructed and operated with the back-trap or reflux returning to one or more of the vertical stills and only the raw oil going through the heating tubes.

Affiant further states after leaving the construction work on the vertical stills the latter part of 1920, as the construction of these stills was finished about that time, that for a short time he returned to the machine shop and then was transferred to the research laboratories where he became well acquainted with Mr. Otto Behimer and worked under Mr. J. H. Burlingham, that in this work affiant's duties were to repair, install, to design and fabricate various means and ways on the experimental stills known as 11-B.

4114 Affiant further states at the time he came to work on the experimental still 11-B in the latter part of 1920 or the fore part of 1921, there was installed a rotary pump to carry out an experiment for returning the hot oil or back trap back to the heating coils along with the charging stock; that this pump experiment proved a failure.

Affiant further states that he continued working in the experimental or research laboratory until about April 1923 and during the period from the Fall of 1920 and Spring of 1921 to 1923 there was frequently discussed the desirability of returning the backtrap or hot reflux to the cracking tubes and in 1921 or 1922 a copy or print of the Dow surge pump was obtained and from that the Texas Company built this type of pump and successfully operated it on the 11-B experimental still and then made one for the large commercial still, known as battery #14 and after that, installed pumps on all the stills.

Affiant further states that about 1923 he left the experimental or research laboratory and returned to the machine shop for about nine months, or about the start of the year 1924, then was transferred to the gas plant for six months and then returned to the machine shop where he is employed at this time.

Affiant states that outside of the above mentioned experi-

ments for returning the backtrap to the heating tubes, the only other experiment made was trying out a jet designed and built by Mr. Fred Fantz, which was tried out on what was known as the west side battery, the jet experiment being made in the Spring of 1919 and was only tried for a day or so as it was entirely unsuccessful in its operation and then the experiment was abandoned and shortly after this the Texas Company tried pumping the reflux
4115 back to the cracking tubes with the hot oil by installing a standard steam pump inside of a shell and using the raw oil to run the pump with, which spent raw oil being discharged into this shell, into which the reflux was run and this reflux and raw oil was then supposed to be picked up by the suction end of the pump and discharged into the heating tubes, but this experiment was a failure and was tried out on experimental still 11-B and it was after this experiment which decided them the practical way was to build a commercial plant, and along the lines they built the twenty-four stills, that is passing the heated oil into cracking tubes and then into the four vertical stills, which were externally heated, and letting the backtrap or reflux to the first two vertical stills and this was continued until the surge pump was worked out in 1921, as above stated, and then all the commercial plants were changed over.

Affiant further states that on January 7th, 1926, he was asked to come over to Mr. Charles Witherup's house at 1925 Sixth Street, Port Arthur, Texas, and arriving there met Mr. Otto Wannack, who explained to him that the Texas Company had filed a patent application involving the use of a jet for returning hot reflux back to the cracking tubes along with the raw oil and affiant then informed Mr. Wannack that they had tried such an experiment in the Spring of 1919, but that the experiment proved a failure and was abandoned.

Affiant further states Mr. Wannack then explained to him that this patent known as the Holmes-Manley patent application was in interference in the Patent Office with one issued to Mr. Dubbs and that the Texas Company, owners of this patent, were claiming that they successfully operated this jet process in 1917, and Mr. Wannack asked the affiant if he would help him to establish the facts.
4116 Affiant thereupon informed Mr. Wannack that if they claimed to have operated this in 1917 he believed there was something suspicious about the matter because

affiant distinctly remembers of their experiment in 1919 and its failure, but that affiant personally could not advise him as to what was really done in 1917 but could get information from a friend of his who had charge of all the records. Therefore, affiant arranged a meeting with this Mr. Morris S. Beyt at Mr. Witherup's house on January 24th, 1926, and at that meeting Mr. Wannack and Mr. Witherup was there and the same matter discussed, whereupon Mr. Beyt advised Mr. Wannack he went in the employ of The Texas Company at Port Arthur in July 1917 and that the only experiment, to his knowledge, that was ever made with the jet for returning the reflux back to the heating tubes was tried out by Mr. Fred C. Fantz in the Spring of 1919 and was only tried for a day or so and proved a failure and that while he couldn't positively say whether it was tried prior to his coming with the company in 1917, but that all the records were in his charge and that he did not believe that such an experiment was conducted and that he was more or less familiar with it because he knew of the controversy in the Patent Office which necessitated getting out papers from these files from time to time for Mr. Otto Behimer.

Affiant further states he expressed a desire to meet the party Dubbs, as well as Beyt, whereupon Wannack said he would try to arrange a meeting, with the result that on January 29, 1926 affiant met C. P. Dubbs in the latter's room at the Beaumont Hotel, Beaumont, Texas, in the afternoon of said day for a short time, throughout which meeting there was present, besides affiant, C. P. Dubbs, Otto Wannack and Charles Witherup. Later in the evening of the said day affiant, together with Morris S. Beyt, had another conference with said C. P. Dubbs, in the lat-
4117 ter's room at said Beaumont Hotel, at which meeting there was present the entire time in addition to the affiant, said C. P. Dubbs, said Wannack and said Beyt. Affiant and said Beyt explained to said C. P. Dubbs that from their knowledge of the operations of The Texas Company, it was their judgment that The Texas Company was attempting to perpetrate a fraud on the said C. P. Dubbs by claiming to have the invention of the said interference earlier than the facts would warrant. Affiant states that said Beyt explained to said C. P. Dubbs in affiant's presence and in the presence of said Wannack, that in the opinion of the said Beyt, the records of The Texas Company, with which said Beyt was familiar, would disclose

the fact that The Texas Company had not carried out any experiments with reference to the returning of reflux condensate to the heating coils of the cracking plant prior to November 1918; and that said Beyt further stated that he believed that he could furnish said C. P. Dubbs with copies of said reports, but that said C. P. Dubbs, after considering the matter, concluded that he did not want any copies of the company's files, but did want an affidavit from said Beyt setting forth what the facts actually were.

Affiant further states that since said meeting of January 29, 1926, he has not seen said C. P. Dubbs, or communicated with him, and that he has not at any time shown to said C. P. Dubbs or to said Otto Wannack either the original records nor copies of said records, or given them copies of said records.

Affiant further states that starting some time in 1925 the Texas Company started again experimenting with the jet, and while not familiar with all the details, he knows of his own knowledge that they have carried on a great deal of work in an attempt to find a method for making the jet work and the results he is not conversant on, but knows

4118 there were no jet experiments conducted at the Port Arthur plant from the time they abandoned the jet experiment in the Spring of 1919, until the middle of the year 1925 and affiant understands these were simply made as they realized their previous experiments were a failure and are now endeavoring to make the jet work successfully.

Affiant further states he voluntarily makes the above statements and finds same to be true and correct to the best of his knowledge and belief and that the only compensation he receives is $100.00 for his time and trouble and incidental expenses coming to Beaumont.

G. H. Brunow.

Sworn to and subscribed before me, a notary public, this 11 day of March 1926.

J. H. Hatley.

4119 DX 213.

(Letterhead of Hotel Clark, Los Angeles.)

Los Angeles, Cal. October 23, 1926.

Dear Harry,

You will find enclosed the sum of One hundred $100.00 Dollars as per our agreement as a Monthly retainer.

You will pardon the delay. I wrote you in last letter that I would wire you twentyfive, that I forgot to do sorry old Dear, hope you havent been put to a inconvenience.

Harry you have the chance of your life before you, "Dig" and uncover names and addresses of Men worked on experimental work during 1916-1918. Cant you get next to Bill Haley? Try to see and feel out Pond, I understand he has the red—, you know what I mean.

Ward tells me that the T. Co has asked him if I got next to Pond, you do it for me will you? Have a good to heart talk with him. I want you to go and see old Man Reed and find out when he is going again to Houston, will try and have someone there and take his affidavit.

Go occasionally over to see Morris Beyts and get friendly again, eventually we must secure his affidavit, do not overlook this bet, that Boy is important he knows more then we have giving him credit.

Harry old Dear use some real good judgment, I have all the confidence in the world in you, go about it with care, do not let the T. Co. find out that you are trying to see Men still in their employment.

In a few days will write you my new address, hoping this will find you in the best of health and kindly remember me to your charming Wife and her people.

Kindest regards to you

4120 DX 214.

(Letterhead of Rice, Hotel, Houston, Texas.)

Dear Friend Harry:

Kindly remember, always destroy this letter, wen trough reading.

I am sorry that I did not see you on Saturday, in Port Arthur, had forgotten your trip to the Country with your Family. I am sending by wire, Postal Tel. 25.00 for payment on Note at Merchants Bank, please take up that note, because Smalley mite try to repossess the car. I would had gladly left you one hundred Dollars, but I am so short; that I will bearly make California. On arrival I will send you 75.00 more covering retainer for the Month. You in turn will send me a receipt wich I will enclose in a registered letter. Kauffman will keep in touch with you and I will also write you from time to time and will send you my address in California. Hoping that you and your dear wife have had a pleasant trip, I wish to remain to you as your sincere Friend always.

4121 DX 215.

(List of Texas Company Employees Given by Wannack to Brunow.)

1. Hoyt A. Pond
   2717—4th St.
   Phone—2620-W
2. N. T. Fuller
   3311—Procter St.
   Phone—2870-W.
3. J. P. Noble,
   530 Vicksburg Ave.,
   Phone—1437
4. E. T. Earnest,
   Now 1112—5th St.,
   Will be 2323—9th.
   Phone 976
5. J. O. Traweek
   1209 Lakeshore Drive
   Phone 960

6. P. T. Terrier,
   1101—12th St.,
   Phone—2540-W
7. J. A. Hunter
   648—4th St.,
   Phone 2899-J
8. J. D. Thompson,
   3232—5th St.,
   Phone—2640-J.
9. H. L. Livergood,
   1803—10th St.,
   Phone—1895-J.
10. Reuben Ludwig
    229—W. 5th St.
    Phone 3041-W
11. I. C. Collins,
    2200—14th St.,
    Phone—924-J.
12. —?— Sagoe
    2331 Proctor St.
    Phone—195
13. Tintz Colbert
14. A. M. Castle
15. Roy Baker
16. —?— Jordan
17. Hugh Wallace
18. "Shorty" Devillier
19. —?— Watson
    Address only
20. Wm. Haley
    Address only
21. "Bill' Burnett
    Address only

(On reverse side:)
Nikalas—
Address only
Myers
Richmond

4122 DX 216.

(List of Texas Company Refinery Operators Given by Kaufman to White.)

1. J. D. Thompson
   3232—5th St., P. A.
   Phone—2640-J.
2. H. L. Livergood
   1803—10th St., P. A.
   Phone—1895-J.
3. Reuben Ludwig
   229—W. 15th St., P. A.
   Phone 3041-W.
4. I. C. Collins,
   2200—14th St., P. A.
   Phone 924-J.
5. J. O. Traweek
   1209 Lakeshore Drive., P. A.
   Phone 960
6. J. A. Hunter,
   648—Fourth St.,
   Port Arthur,
   Phone 2899-J.
7. J. P. Noble,
   530 Vicksburg Ave., P. A.
   Phone 1437
8. N. T. Fuller,
   3311 Proctor Street, P. A.
   Phone 2870-W.

4123 9. H. A. Pond

10. Roy Baker
11. Tintz Colbert
12. A. M. Castle
13. Hugh Wallace
14. ..... Jagoe
    2331 Proctor St., P. A.
    Phone 195
15. "Shorty" Devillier
16. ..... Watson
    Address —?—

17. Paul F. Terrier
1101—12th St., P. A.

Location Unknown:
W. A. Cameron
Nick Dunnen
"Ben" Galsworthy
J. C. Kinsley
..... Chewning

4124 DX 217.

AFFIDAVIT.

I, Morris S. Beyt, a native of Louisiana, now a resident of Port Arthur, Texas, depose and say that I am ..... years of age, married, and a graduate chemist and have been in the employ of the Texas Company since July 9, 1917, starting to work at

.....

.....

and in 19 ..... became associated with Mr. Otto Behimer in his research work for The Texas Company and since ..... have been acting as assistant and secretary to Mr. Otto Behimer, having charge of all records, etc., covering all the research work conducted at Port Arthur on cracking and other experimental work relating thereto; and that from July 1917 up to the present time know of my own knowledge all the experimental and commercial work carried on at Port Arthur plant of The Texas Company in cracking petroleum and other experiments and commercial work relating thereto; that my duties being such as to necessitate my frequently going through the records in the files covering the period of 1915, 1916 and 1917 prior to my entering the employ of the Texas Company in July, 1917; and that I am familiar with the records covering the experimental work done in cracking petroleum during said period of 1915, 1916 and 1917.

Affiant further states that about Jan. 16th, Gunther Harry von Brunow asked him to meet Otto Wannack at the home of Charles Witherup 1925 Sixth Street, Port
4125 Arthur, Texas, that he wanted to discuss with him the Holmes-Manley cracking process which is in inter-

ference, so affiant was informed, with the patent application of said Dubb's. Jan. 21st, 1926. That affiant met said Otto Wannack at the home of said Witherup in the presence of said Brunow and said Witherup, and that Otto Wannack explained to the affiant that he had reason to doubt the truth of the statements alleged by the Texas Company as to the operation of their cracking process in interference with Dubbs, and that he wanted to discuss the matter with affiant.

Affiant stated that he came in the employ of The Texas Company on July 9, 1917, and continued with them up to the present date; that there was no jet experiment made in July 1917, and in fact that prior to November 1918 The Texas Company never carried out any experiments or tests in which reflux condensate was returned to the heating coil for further treatment.

That in the Spring of 1919 an experiment was made with the jet for accomplishing this purpose by Fred Fantz, Otto Behimer and possibly others, on what was known as the reconstructed west side battery.

Affiant states that prior to his entering the employ of the company he could not say personally what was done, but believed that the records of the company would disclose certain facts relative thereto.

Affiant further states that he was convinced that an injustice was being done to said C. P. Dubbs and offered to allow said Otto Wannack to examine these records and possibly to make copies therefrom, but that said Otto Wannack said that this was a matter that he would have to take
4126 up with said C. P. Dubbs, his principal.

Affiant further stated to said Wannack that he was desirous of meeting Mr. Dubbs, whereupon a meeting was arranged at the Beaumont Hotel, Beaumont, Texas, on the evening of January 29, 1926, at the rooms of said C. P. Dubbs at the Beaumont Hotel, Beaumont, Texas, at which meeting there was present throughout the said Brunow and said Wannack.

That Mr. Dubbs stated to affiant that The Texas Company had filed an application for Letters Patent on November 21, 1918, and alleged that they had reduced it to practice by successfully operating it in a full size apparatus on or about May 30, 1917, and that Dubbs showed to affiant what Dubbs stated was a copy of the Holmes-Manley patent

application in interference, and also copies of certain of his applications and the patent which he stated was in interference and issued to said C. P. Dubbs. That said Dubbs also showed affiant copies of letters between L. C. Lufkins, Chairman of The Texas Company, R. C. Holmes, Vice President of The Texas Company, G. F. Shefstead and K. A. Mackenzie, employees of The Texas Company, and affiant was told by said Dubbs that said Mackenzie and Shefstead had witnessed the operation of a Dubbs process at Mr. Dubbs' laboratory at Wilmette, and that said Dubbs understood that a full report of these operations of said Dubbs' plant was sent to The Texas Company and undoubtedly was now in their files.

Affiant further states that after said C. P. Dubbs had explained the history of this matter, the affiant stated that in his judgment he felt that the said C. P. Dubbs had a right to be suspicious as to the correctness of the statements made by The Texas Company to the Patent
4127 Office, and that he was interested in learning the facts in order to prevent said Dubbs from being defrauded of his rights in said invention.

Affiant felt convinced of the truth of said story of said C. P. Dubbs and stated that he felt that under the circumstances he might be willing, if possible, to let C. P. Dubbs see the copies of the records of the Texas Company relating to such matter, but that said C. P. Dubbs stated that he was more interested in getting an affidavit setting forth the truth than he was in seeing or getting copies of the record of The Texas Company relative to this matter, and finally stated that he felt that under the circumstances he should not obtain copies of these records.

Affiant further states that at said meeting he stated to said C. P. Dubbs that his reason for offering to show said C. P. Dubbs said records or copies thereof, was to convince said C. P. Dubbs as to the correctness of the statements made by affiant relative to this matter, but that said C. P. Dubbs stated that he would prefer an affidavit from affiant as to the correctness of these facts, whether from the personal knowledge of affiant or what affiant had learned from said records.

Affiant further states that since said meeting of January 29, 1926 he has not seen said C. P. Dubbs, or communicated with him, and that he has not at any time shown to

said C. P. Dubbs or to said Otto Wannack either the original records nor copies of said records, or given them copies of said records.

4128 Affiant further states that said Dubbs advised him that he was desirous of obtaining absolute facts from affiant. Affiant then explained that he went with The Texas Company on July 9, 1917 and from that date up to the present time continued in their employ and that he, of his own knowledge, was thoroughly familiar with all the experiments carried on during this period for returning the reflux or back trap to the heating coils and that the only actual experiment that was ever made or tried during that period was in the Spring of 1919 on what is known as the west side experimental stills, which consisted of a heating coil, four vertical stills, and aerial condensers, and the reflux or backtrap up to that time was returned to the first two vertical stills and that in the Spring of 1919 a Mr. Fred Fantz, then master mechanic of the plant, at the request of Mr, Otto Behimer made an ejector and made a temporary connection for trying this ejector out on this west side experimental plant. The ejector was temporarily connected in the line for supplying the raw oil to the heating coils, and the reflux or back trap was lead down to the ejector; that just prior to this experiment there had been a great deal of discussion with Behimer, Fantz, and others and affiant remembers Mr. Fantz stated it would not work and suggested that they write asking injector manufacturers about same and which they did under date of November 23, 1918 to the Schuette-Koerting Company, ..., and received replies back from Schuette-Koerting Comp., R. E. Helmer, Jet. Dept., under date of Dec. 2, 1918, advising the ejector would not be suitable, but affiant believes it was Mr. Behimer, who insisted that Mr. Fantz make the jet and that it be

4129 tried, which was done, but they were unable to control the plant or the volume of reflux to it, so they only tried it a short while, a part of each of two or three days, and then the experiment was abandoned and the back-trap connected back to the two vertical stills and the failure of the operation is report to ..... under date of ..... signed by .....

Then Mr. Behimer on ....., 1919, had Mr. Fantz place a steam pump inside of a shell and operate this pump by feeding the raw oil into the steam end of

the pump and discharging the raw oil out of the exhaust of the pump into this shell where it would be mixed with the backtrap which flowed into this shell and the two would be picked up by the suction end of the pump and forced into the heating tubes, but this experiment proved a failure and was abandoned. This experiment was conducted on what was known as the experimental still 11-B back of the laboratory and in order to carry the experiment out they had to build an aerial condenser for furnishing the back-trap.

Affiant further states that the result of these experiments determined them in adopting a process wherein the oil was preheated in a bank of tubes, then discharged into the four vertical stills, which were externally heated, and the vapors from the last still passed into an aerial condenser and the back trap or reflux was led back to the first two vertical stills and the residuum was withdrawn from the third and fourth vertical stills, and about the Summer of 1919 they started building the first twenty-four stills, constructed and operated in this manner, the first one being fired in February, 1920 and the last of the twenty-four being
4130 fired in December, 1920.

Affiant further states that along about 1921, as he remembers, they got hold of a drawing from the catalog of a Dow surge pump, whereupon they had Mr. Fantz build one and first tried it out on the experimental still 11-B for pumping the backtrap back to the heating tubes and this proved a success, whereupon in ....., 19....., they installed one in #14 battery of the first twenty-four batteries, built and put in operation in 1920, the second one to be equipped was battery #13 and the third one in battery #22 and then they installed surge pumps in all the units of the battery and since then have been carrying on this practice.

Affiant further states he has gone through these records and has carefully examined all the data on the experimental work done there, and there is nothing in the records about any jet experiment being carried on, or any experiment being conducted for carrying the back trap to the heating tubes; that the records show all the experimental work done by these inventors prior to July 1917 was along the lines that their first twenty-four commercial stills were erected and operated on, that is returning all the backtrap to the vertical stills.

Affiant further states that since this interference came up and some time during the year 1925 the Texas Company ordered some jets from the Schutte-Koerting Company which were delivered on the Spring of 1925 and started experimenting in an endeavor to make the jet work and have been conducting these experiments on #1 still at Port Arthur and have made various set-ups in attempts to
4131 make the jet work and have changed the jets from time to time. (Explain all the different set-ups.)

Affiant further states he has carefully read the above statements before signing and find them true and correct to the best of his knowledge and belief.

.....

Sworn to and subscribed before me, a notary public, this ..... day of ....., 1926.

.....

(Seal) *Notary Public.*

4132 DX 219.

AFFIDAVIT.

State of Texas }
County of Jefferson } ss.

I, Morris S. Beyt, a native of Louisiana, now a resident of Port Arthur, Texas, depose and say that I am ... years of age, married, and a graduate chemist and have been in the employ of the Texas Company since July 9, 1917, starting to work at

and in 19 ... became associated with Mr. Otto Behimer in his research work for The Texas Company and since ... have been acting as assistant and secretary to Mr. Otto Beheimer, having charge of all the records, etc., covering all the research work conducted at Port Arthur on cracking and other experimental work relating thereto; and that from July 1917 up to the present time know of my own knowledge all the experimental and commercial work carried on at Port Arthur plant of The Texas Company in cracking petroleum and other experiments and commercial work relating thereto; that my duties being such as to

necessitate my frequently going through the records in the files covering the period of 1915, 1916 and 1917 prior to my entering the employ of The Texas Company in July 1917; and that I am familiar with the records covering the experimental work done in cracking petroleum during said period of 1915, 1916 and 1917.

4133 Affiant further states that about January 16th, Gunther Harry von Brunow asked him to meet Otto Wannack at the home of Charles Witherup, 1925 Sixth Street, Port Arthur, Texas, that he wanted to discuss with him the Holmes-Manley cracking process which is in interference, so affiant was informed, with the patent application of said Dubb's. January 21st, 1926, affiant met said Otto Wannack at the home of said Witherup in the presence of said Brunow and said Witherup, and that Otto Wannack explained to the affiant that he had reason to doubt the truth of the statements alleged by the Texas Company as to the operation of their cracking process in interference with Dubbs, and that he wanted to discuss the matter with affiant.

Affiant stated that he came in the employ of The Texas Company on July 9, 1917, and continued with them up to the present date; that there was no jet experiment made in July 1917, and in fact that prior to November 1918 The Texas Company never carried out any experiments or tests in which reflux condensate was returned to the heating coil for further treatment.

That in the Spring of 1919 an experiment was made with the jet for accomplishing this purpose by Fred Fantz, Otto Behimer and possibly others, on what was known as the reconstructed west side battery.

Affiant states that prior to his entering the employ of the company he could not say personally what was done, but believed that the records of the company would disclose certain facts relative thereto.

Affiant further states that he was convinced that an injustice was being done to said C. P. Dubbs and offered to allow said Otto Wannack to examine these records

4134 and possibly to make copies therefrom, but that said Otto Wannack said that this was a matter that he would have to take up with said C. P. Dubbs, his principal.

Affiant further stated to said Wannack that he was desirous of meeting Mr. Dubbs, whereupon a meeting was arranged at the Beaumont Hotel, Beaumont, Texas, on the evening of January 29, 1926, at the rooms of said C. P.

Dubbs at the Beaumont Hotel, Beaumont, Texas, at which meeting there was present throughout the said Brunow and said Wannack.

That Mr. Dubbs stated to affiant that The Texas Company had filed an application for Letters Patent on November 21, 1918, and alleged that they had reduced it to practice by successfully operating it in a full size apparatus on or about May 30, 1917, and that Dubbs showed to affiant what Dubbs stated was a copy of the Holmes-Manley patent application in interference, and also copies of certain of his applications and the patent which he stated was in interference and issued to said C. P. Dubbs. That said Dubbs also showed affiant copies of letters between L. C. Lufkins, Chairman of The Texas Company; R. C. Holmes, Vice President of The Texas Company, G. F. Shefstead and K. A. Mackenzie, employees of The Texas Company, and affiant was told by said Dubbs that said Mackenzie and Shefstead had witnessed the operation of a Dubbs process at Mr. Dubbs' laboratory at Wilmette, and that said Dubbs' understood that a full report of these operations of said Dubbs' plant was sent to The Texas Company and undoubtedly was now in their files.

Affiant further states that after said C. P. Dubbs had explained the history of this matter, the affiant stated that in his judgment he felt that the said C. P. Dubbs
4135 had a right to be suspicious as to the correctness of the statements made by The Texas Company to the Patent Office, and that he was interested in learning the facts in order to prevent said Dubbs from being defrauded of his rights in said invention.

Affiant felt convinced of the truth of said story of said C. P. Dubbs and stated that he felt that under the circumstances he might be willing, if possible, to let C. P. Dubbs see the copies of the records of the Texas Company relating to such matter, but that said C. P. Dubbs stated that he was more interested in getting an affidavit setting forth the truth than he was in seeing or getting copies of the records of The Texas Company relative to this matter, and finally stated that he felt that under the circumstances he should not obtain copies of these records.

Affiant further states that at said meeting he stated to said C. P. Dubbs that his reason for offering to show said C. P. Dubbs said records or copies thereof, was to convince said C. P. Dubbs as to the correctness of the statements made by affiant relative to this matter, but that said C. P.

Dubbs stated that he would prefer an affidavit from affiant as to the correctness of these facts, whether from the personal knowledge of affiant or what affiant had learned from said records.

Affiant further states that since said meeting of January 29, 1926 he has not seen said C. P. Dubbs, or communicated with him, and that he has not at any time shown to said C. P. Dubbs or to said Otto Wannack either the original records nor copies of said records, or given them copies of said records.

4136 Affiant further states that said Dubbs advised him that he was desirous of obtaining absolute facts from affiant. Affiant then explained that he went with The Texas Company on July 9, 1917 and from that date up to the present time continued in their employ and that he, of his own knowledge, was thoroughly familiar with all the experiments carried on during this period for returning the reflux or back trap to the heating coils and that the only actual experiment that was ever made or tried during that period was in the Spring of 1919, on what is known as the west side experimental stills, which consisted of a heating coil, four vertical stills, and aerial condensers, and the reflux or backtrap up to that time was returned to the first two vertical stills and that in the Spring of 1919 a Mr. Fred Fantz, then master mechanic of the plant, at the request of Mr. Otto Behimer, made an ejector and made a temporary connection for trying this ejector out on this west side experimental plant. The ejector was temporarily connected in the line for supplying the raw oil to the heating coils, and the reflux or back trap was lead down to the ejector; that just prior to this experiment there had been a great deal of discussion with Beheimer, Fantz, and others and affiant remembers Mr. Fantz stated it would not work and suggested that they write asking injector manufacturers about same and which they did under date of November 23, 1918, to the Schutte-Koerting Company, and received replies back from Schutte-Koerting Company, R. E. Hellmer, Jet Department, under date of December 2, 1918, advising the ejector would not be suitable, but affiant believes it was Mr. Beheimer who insisted that Mr. Fantz make the jet and that it be tried, which was done, but they

4137 were unable to control the plant or the volume of reflux to it, so they only tried it a short while, a part of each of two or three days, and then the experiment was abandoned and the backtrap connected back to the two

vertical stills and the failure of the operation is report to under date of signed by Then Mr. Beheimer on 1919, had Mr. Fantz place a steam pump inside of a shell and operate this pump by feeding the raw oil into the steam end of the pump and discharging the raw oil out of the exhaust of the pump into this shell where it would be mixed with the backtrap which flowed into this shell and the two would be picked up by the suction end of the pump and forced into the heating tubes, but this experiment was conducted on what was known as the experimental still 11-B back of the laboratory and in order to carry the experiment out they had to build an aerial condenser for furnishing the backtrap.

Affiant further states that the result of these experiments determined them in adopting a process wherein the oil was preheated in a bank of tubes, then discharged into the four vertical stills, which were externally heated, and the vapors from the last still passed into an aerial condenser and the back trap or reflux was led back to the first two vertical stills and the residuum was withdrawn from the third and fourth vertical stills, and about the Summer of 1919 they started building the first twenty-four stills, constructed and operated in this manner, the first one being fired in February, 1920 and the last of the twenty-four being fired in December, 1920.

Affiant further states that along about 1921, as he remembers, they got hold of a drawing from the catalog 4138 of a Dow surge pump, whereupon they had Mr. Fantz build one and first tried it out on the experimental still 11-B for pumping the backtrap back to the heating tubes and this proved a success, whereupon in fall of the year, 1921, they installed one in #14 battery of the first twenty-four batteries, built and put in operation in 1920, the second one to be equipped was battery #13 and the third one in battery #22 and then they installed surge pumps in all the units of the battery and since then have been carrying on this practice.

Affiant further states he has gone through these records and has carefully examined all the data on the experimental work done there, and there is nothing in the records about any jet experiment being carried on, or any experiment being conducted for carrying the back trap to the heating tubes; that the records show all the experimental work done by these inventors prior to July 1917 was along the lines that their first twenty-four commercial stills were

erected and operated on, that is returning all the backtrap to the vertical stills.

Affiant further states that since this interference came up and some time during the year 1925, the Texas Company ordered some jets from the Schutte-Koerting Company which were delivered in the Spring of 1925, and started experimenting in an endeavor to make the jet work and have been conducting these experiments on #1 still at Port Arthur and have made various set-ups in attempts to make the jet work and have changed the jets from time to time. (Explain all the different set-ups). 5 changes

first	jet 30	bl. part of reflux handled
second	" 42	" " " " "
third	" 50	" " " " "
fourth	" 54	" almost pulled heavy on tower and perked
fifth	" 60	" worked OK. with reflux

4139 Affiant further states he has carefully read the above statements before signing and find them true and correct to the best of his knowledge and belief.

.....

Sworn to and subscribed before me, a notary public, this ..... day of ..... 1926.

.....

(Seal) *Notary Public.*

4140 DX 220.

AGREED STATEMENT.

This exhibit is a certified copy of bill of complaint filed in the United States District Court for the District of Kansas on July 25, 1934, and amended bill of complaint filed August 10, 1934, and supplemental bill filed April 28, 1936, by the Universal Oil Products Company, plaintiff, *vs.* The Dickey Refining Co. (a Texas Company licensee), defendant, Equity No. 822N, wherein the plaintiff charged infringement of the Dubbs patent No. 1,392,629 and other patents by the defendant; and certified copy of answer filed by said defendant on July 21, 1936, wherein Otto Behimer was set up as the prior inventor of the subject matter of the Dubbs 1,392,629 patent.

2261

Congress Hotel Company

MICHIGAN AVENUE AND CONGRESS STREET
CHICAGO

MR OTTO HANNACK — DX 234

ACCOUNTS ARE DUE WHEN PRESENTED — ROOM NO. F32

	20	21	22	23	24	25	26
BROUGHT FORWARD		9 6	23 40	30 40	38 10	47 45	54 52
ROOMS	7 —	7 —	7 —	7 —	7 —	7 —	7 —
RESTAURANT LOUIS IV							
GRILL	4.35	4.60	5.40	4.30	5.35	5.15	1.90
	+	Pd by cash by them.					
ROOM SERVICE							
BAR							
CANDY							
TAILOR & VALET SERVICE	1.75	1.25	10.77.				
LAUNDRY—HOUSE	—	2.45			2.52		
TELEPHONES—TOLL							
LOCAL CALLS	.10	.10	.70			.10	.10
TELEGRAMS							
C. O. D'S							

Chicago, July 25, 1925

EXPENSE ACCOUNT COVERING
TRIP - CALIFORNIA - CHICAGO
OTTO WAHRACK

Transportation - Los Angeles to Chicago	$ 79.80
Pullman	23.80
Meals	13.00
	$ 116.45
— Adv. from Petty Cash	5.00
Bal.	111.45

PAID

Separate check Mrs. Wahrack will call for later to ... — give this check to Mary —

OK, CP.
@ by Tues. Bitzer in acct

RUSH
TIME 4.00

RECEIVED
JUL 28 1925
ACCOUNTING DEPARTMENT

OK Jyke

2371

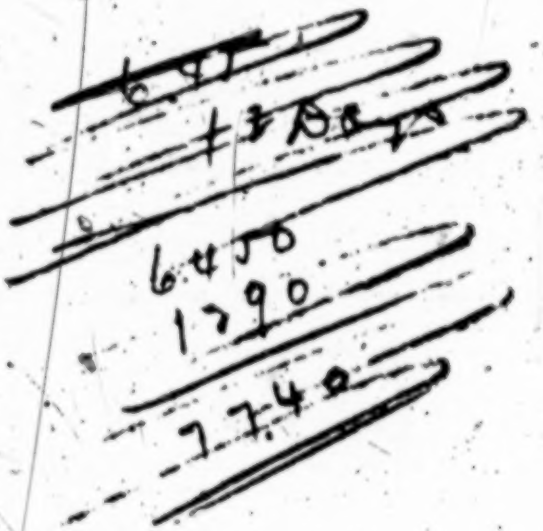
JUL 29 1926

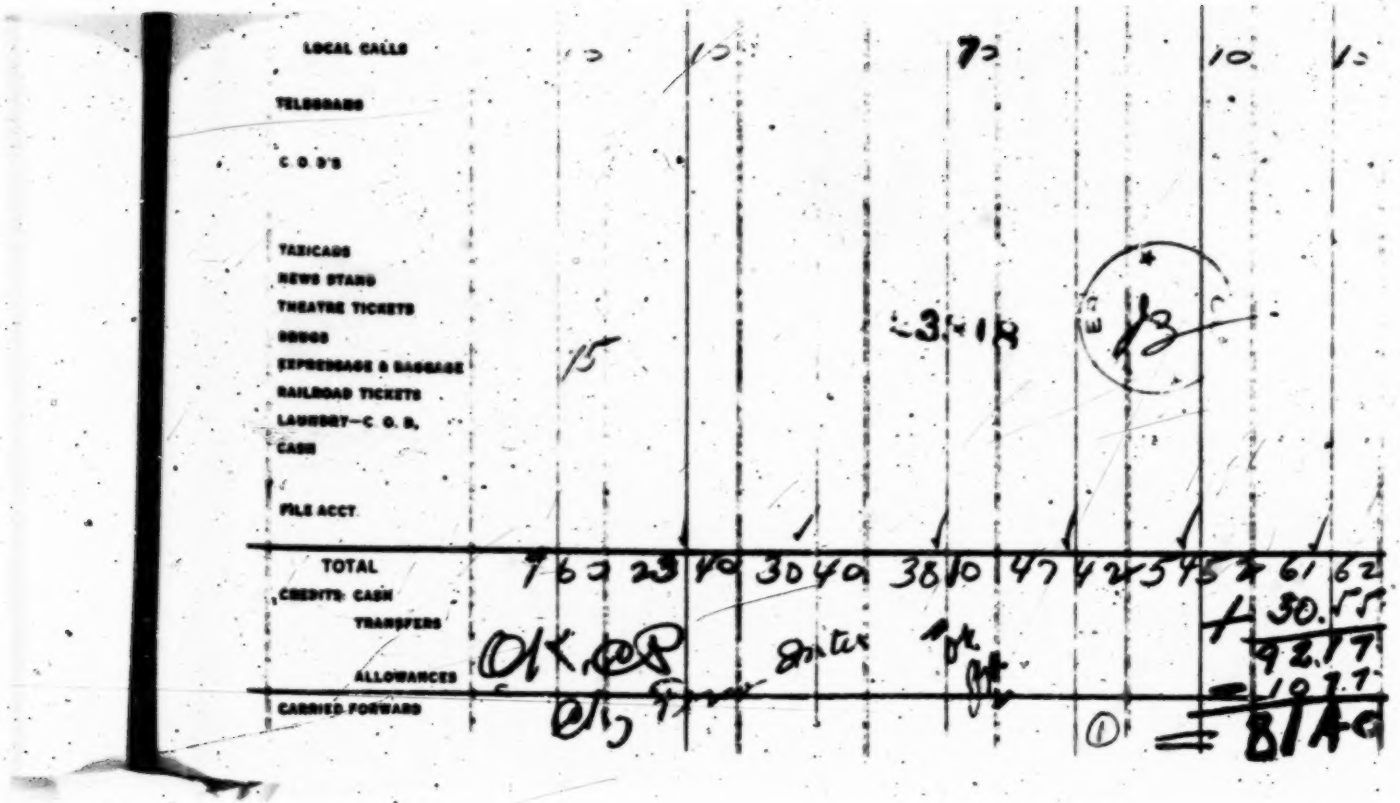
Congress Hotel

11 d. - Salary 7/20 to 7/31 $51 40

7740

158.80




LOCAL CALLS
TELEGRAMS
C. O. D'S
TAXICABS
NEWS STAND
THEATRE TICKETS
ODDS
EXPRESSAGE & BAGGAGE
RAILROAD TICKETS
LAUNDRY—C. O. D.
CASH
FILE ACCT.
TOTAL
CREDITS: CASH
TRANSFERS
ALLOWANCES
CARRIED FORWARD

Congress Hotel Company

MICHIGAN AVENUE AND CONGRESS STREET
CHICAGO.

M. C. H. Hamilton

732

ACCOUNTS ARE DUE WHEN PRESENTED — ROOM NO.

1925	27	28	29	30	31			
BROUGHT FORWARD	7	68 42	76 22	73 36	65 16			
ROOMS	7 -	7 -	7 -	7 -				
RESTAURANT LOUIS XV								
GRILL	4.85	4.60	4.90	2.90	⊕ 21.10			
		Salad Crab ½ Steak		3.85 +				
POOR SERVICE								
BAR								
CANDY								
TAILOR & VALET SERVICE								
LAUNDRY—HOUSE								
TELEPHONES—TOLL		—						
LOCAL CALLS	2 =	4		3 =	1			
TELEGRAMS				10				
C O D'S								
TAXICABS								
NEWS STAND								
THEATRE TICKETS								
DRUGS								
EXPRESSAGE & BAGGAGE								
RAILROAD TICKETS								
LAUNDRY—C O D.								
CASH								
FILE ACCT								
TOTAL	68 42	76 22	85 [illegible]	65 16		85.40		
CREDITS CASH			[illegible]			- 2.00		
TRANSFERS						- 53.20		
						- 61.50		
ALLOWANCES						31.70		
						+ 21.10		
CARRIED FORWARD			73 30			45.42.80		

COMPLIMENTARY

211 25 00 10 42 23 416 50

Congress Hotel Company

MICHIGAN AVENUE AND CONGRESS STREET
CHICAGO

Mr O Hammack

ACCOUNTS ARE DUE WHEN PRESENTED — ROOM NO. 732

BROUGHT FORWARD	
ROOMS	
RESTAURANT LOUIS XVI	3.75
GRILL	
ROOM SERVICE	
BAR	
CANDY	
TAILOR & VALET SERVICE	
LAUNDRY—HOUSE	
TELEPHONES—TOLL	
LOCAL CALLS	30
TELEGRAMS	
C O D S	
TAXICABS	
NEWS STAND	
THEATRE TICKETS	
DRUGS	
EXPRESSAGE & BAGGAGE	
RAILROAD TICKETS	
LAUNDRY—C O D.	
CASH	OK CR
FILE ACCT.	
TOTAL	3.85
CREDITS: CASH	
TRANSFERS	
ALLOWANCES	
CARRIED FORWARD	

CONGRESS HOTEL CHICAGO
JUN 12 1 8 9
PAID
8125

P.M. CASHIER I

2271

AUG 10 1925

7/29 - Balance — $57.44

7/30 - 8.20

7/31 - 1.10

$93.74

Less Balance forwarded 61.62

32.12

add - for Meals 21.10

53.22

Less - laundry 2.22

$51.00

Hotel

4 days @ 7.00 $28.00

Meals 21.10

T.C + T.C 1.90

$51.00

Miss Baker -
Please remember for $43.30

BEAUMONT, TEXAS. AUG - 1925 192

M. P. H. Wammock

923

IN ACCOUNT WITH

HOTEL BEAUMONT

We Render Statements Monthly on all Items. If Any Errors Please Return Promptly

All Accounts Payable on Presentation of Statement

	Apt Room 8/2 - 8/10	10.50	35 00
	Local Phone Tax		1 10
3	Baggage		1 50
3	Cafe 15-210-15	2.40	2 40
3	Telegram 116-72		1 88
3	Cafe	50	50
4	Telegram		72
4	Tailor	1.00	1 00
4	Cafe 15-200-15	2.30	2 30
5	" 15-15-15	45	45
5	Telegram		1 35
6	Laundry	3.55	3 55
7	Telegram 64-72		1 36
7	Cafe	15	15
8	Telegram		1 07
8	Cafe 10-200	2.15	2 15
		23.00	56 48
			23.00
			33.48
			21.95
			55.43

24405 PAID Cashier Ward

Meals

#

24406

R. R. Ticket, Tod. Meal, - 15.20 + 4.35 + 1.40.	20.95.
Fare, at 4¢ per Mile 358 Miles.	35.80.
Crossplain, 2 days Meals & Lodging	8.50.
Big Lake, 1. day for 2.	8.30.
Eastland, 1. day Meals & Lodging for 2	5-65.
Ranger, Meals for 2.	1.80.
Dallas, Hotel & Meals. 3.00 + 0.40 + 1.15	4.55.
R. R. Ticket, Pullman, 15.35 + 1.13 + 3.75	20.20.
total =	105.75

COMPTOMETER

I wrote for Receipt of car hire, should have same by the end of week, will mail upon receipt.

Yours truly.

BEAUMONT, TEXAS. 192

M O & H Raymond

923

IN ACCOUNT WITH

HOTEL BEAUMONT

We Render Statements Monthly on All Items. If Any Error Please Return Promptly

All Accounts Payable on Presentation of Statement

Room 846 - 9/18	10	3.00
Rm	10	10
Long	2 95	2 95
	1 82	1 82
Coffee	15	15
	95	95
	60	60
		9 55
	16 56	
	9 56	
	PAID	7.00
9/18 Meals		5.90
		$12.90

COMPTOMETER

24624 Mh gpr

9

2273

512 WARWICK OTTO 8-20 4 50 Series E RICE HOTEL

HOUSTON, TEXAS

BALANCE FORW'D FROM [illegible] AM

BALANCE FORW'D TO

Nº 5016

DATE	5 20	
FORWARD	KF	4 50
ROOM	YES	
CAFE	Lunch for Prince Tel Seconds to Load ex	4 50
TELEPHONE		
LONG DISTANCE		
VALET		
LAUNDRY		
C. & P.		
PORTER		
R. R. TICKETS		7 50
TELEGRAMS		18.
C. O. D'S		
	24623	
TOTAL	47	$16.65
ALLOWANCES		
CASH		
BALANCE FORW'D		

25 10

To Incurred Expense from Sept 2nd to 17th 1925. 192

House Rent	45. 00	
Groceries	48. 15.	
Caretaker	14. 00	
	107. 15.	
Sept. 16. to Houston.		
R. R. and return	6. 05.	
Meals (2.)	2. 85.	
total.	116.05	
	1.15	

OK.
R. C. L. Legal

Advanced

9/15. 25.

Expenses for trip to Houston.

8. nights lodging @ 75¢	6.00
7. days meals @ 1.50 p. day	10.50
R.R. return	6.05.
" from Houston to Fort Worth	10.30.
Pullman	3.75.
RR. from Belleville to Houston	3.85.
Pullman Tourist tip	1.00.
Professional service	200.00
~~$240.45~~	
241 45	

O. Warnack

Oct. 28.

JHH

SEP 4 1925

RECEIVED
- 1925
ACCOUNTING DEPARTMENT

Note

Draw check to
a H Lindahl, and
deposit O.H. acct.

EXPENSE ACCOUNT for 2 WEEKS ENDING 9/1.25.

HOUSE RENT	———	45.00
GROCERIES, MEALS,	—	46.05
CARETAKER	———	14.00
R.R. to Fort.	(5) —	5.40
MEALS	(5) —	3.00
		114.05
—		[redacted]

The item of 35.40 has been previously allowed, so I deducted same.

Item 35.40 deducted from last exp
acct.

24691

Expenses as above $ 114.05
Salary for Aug - $700.00
less - cash adv. 9/4 - 150 50.00
$ 164.05

Chg - 30 - Litigation Exp -
S.O.S. $ 314.05
cr Employees Working Fund 150.00
cr Dubois Special $164.05

.85

2287

Deposits.	Checks Drawn.	
300.00	150.00	9.85
150.00	15.75	7.00
85.75	100.00	7.00
55.43	54.98	5.70
105.75	38.85	5.00
23.55	50.00	25.00
35.80	16.55	25.00
50.00	90.00	125.00
78.25	10.00	25.10
~~240.45~~ 24145	11.20	17.30
116.65	10.—	100.00
~~1246.63~~ 124763	1.60	50.00
42.80 = 14280	20.—	20.00
~~1889.43~~ 129043	17.85	~~348.75~~
1155.53 14873	20.—	421.95
133.90 141.70	120.—	~~726.78~~ 72678
131.05	~~478.75~~ 42195	
2.85	~~1155.53~~ 114873	
	642.26	
	2.85	
	639.30	

a/c
1000

Cash on hand. 131.05.

Beaumont: House Rent . 25.10
L.P. Ippolito Hauling the
B. Johnson, carbaker 17.30
7.00
49.40

Left Exp. sheet

Trip to Houston 5 Days Work.
RR Fair and return 30.74
Hotel 1 day 4.00
Meals (6) 8.40
43.14

To Chicago
RR. fair 50.36.
Meals (4) 5.30
Hotel in Chicago (4.) 16.00
Meals (12) 15.60
Baggage 5 Cal. 3.05.
RR. fair return 54.11.
Meals (4) 5.30.
149.72
49.40
43.14

Mutual added by CR 242.26
SALARY 100.00
Month's Sep 200.00
CR. Overmack 542.26

Issued Check for 542.26
Returned in Currency
to Mutt & Lynn 200-
342.26

242.26
101.70
343.96

DATE	ITEMS			
4/4/25	Round trip Fare to Chic 38.50 / Return 12.00	50	50	
	Meals (7.)	12	40	
	Hotel (Chicago) 4 days @ 3.00	12	00	
	Fares cab fares one to depot		20	
	Rail road to Rail Inform.	38	90	
	Pullman Kansas City - Rail.	12	50	
	Meals (2.)	1	50	
	Rice Hotel, 1 day	4	50	
	Paid Voucher No 25.	192	00	
	Registered mail Reg fee 15¢ Mailed 1¢ 1/4 1%			26818

$1

DATE	ITEMS			
4/6/25	Hotel 4/6 to 4/27.	52	50	
to	Meals " " " Bo. 25. 125.6	63	00	
4/27/25	night school fees, books, carfare etc.	6	10	
	" " in Chicago by Mr Wilson employ			
	by Co. (30 days)	36	00	
	Miscellaneous Exps.	33	80	
		211	40	

Marked 0/
#212
P.M. 82/323

$2

DATE	FOLIO	ITEMS	DEBIT	CREDIT	BALANCE
Dec 27		Rent for week	52 50		
"		Hydro	63 00		
		Entertaining, Sheets & Bar Service			
		Telephone (2) Rent Air Conditioner			
		Gas Lunch	98 35		
		Rental Instruction Units of Ltr.			
		Hydro Bill on Oil	1 00		
		Express from Perkins	1 20		
		Return of Films	1 50		
			167 85		
			200 —		
		OK. Q.T. 27700	367 85		

JAN 1 1 1926

DATE	FOLIO	ITEMS	DEBIT	CREDIT	BALANCE
Dec. 1. 25		Gasoline	1 50		
Dec. 6. 25		Hydro Rent	8 00		
Dec. 19/25		Bell Phone	21 30		
Dec. 22.		Chicago Bell Phone	39 35		
Dec. 28		Hotel	26 90		
Dec. 30.		Bell Phone	16 85		
Dec. 30		" " " for (2)	76 85		
Jan. 1. 26		Hotel for (2)	57 80		
Jan. 1. 26		Bell Phone	50 80		
Jan. 6.		Hotel 28863	56 15		
Jan. 6		Bell Phone	3 60		
Jan. 8. 9.		Electric Sweeper	9 30		
"		Lunch for (2)	8 80		
Jan. 9.		Electric Bell Phone for (2)	30 50		
			346 10	346.00	
		Charge - Inv 4935			

DATE	FOLIO	ITEMS	DEBIT	CREDIT	BALANCE
		R.R. to New Orleans, Rel. Meals, Miscellaneous for (2.)	37.10		
		Hotel, Meals, Miscell. for (2.)	99.25		
		R.R. to Biloxi, Rel. Miscell. for (2.)	9.90		
		" to New Orleans, Rel. Miscell. for (2.)	8.60		
		Hotel, Meals Miscell. for (2.)	55.70		
		R.R. to Port Arthur, Rel. Meals Miscell. for (2).	34.55		
			169.60		
				164.00	
		7107			

DATE	FOLIO	ITEMS	DEBIT	CREDIT	BALANCE
2/13 to 2/14		Plaza Hotel	17.60		
2/14 to 2/21		Plaza Hotel	17.50		
		Meals, Port, miscellaneous	16.90		
		R.R. Galveston, Return	8.90		
		Hotel, Miscellaneous	27.60		
		R.R. to Chicago, Pullman	50.05		
		Hotel, Meal, Miscellaneous	53.05		
		R.R. to Washington, Pullman	36.05		
		Hotel, Meal, Miscellaneous " 6343	71.40		
		R.R. to Port " 6336	67.40		
		Meal, Miscellaneous	16.85		
			384.00		
			-200.00		
			184.00		
				184.00	
				400	
				584.00	

DATE	FOLIO	ITEMS	DEBIT	CREDIT	BALANCE
		R. R. Electric, Pullman, to New Orleans	65 00		
		Meals, miscellaneous exp's	5 15		
		Hotel Beauregard exp's	45 25		
		Photo print	14 00		
		Barbershop	19 00		
		R.R.& Kinder and return, for (2)	16 00		
		Meals, miscellaneous exp's (2)	6 35		
		Electric & Bar (2)	1 20		
24/11	16	Plaza Hotel	17 50		
		Meals, miscellaneous exp's	16 80		
		Taxi Repair	11 85		
		290606	165 70		
		CK. R P J.		165 00	
		Ch., Rep.			
		Mailed 2-6-16			

DATE	FOLIO	ITEMS	DEBIT	CREDIT	BALANCE
1/31	16	Plaza Hotel, Room	56 15		
1/31	24	Meals, 2 days, average 3.50 p.	45 00		
		Taxi to Kinder and return	7 55		
		Hotel and Meals, rep.	18 30		
		Electric & Beauregard T. trips and return	7 55		
		Beauregard miscellaneous exp's. Stamps, Notary			
		Paper, Envelopes, Cleaning	31 55		
		Typewriting Machine	37 00		
		Telegrams	3 60		
		Sundry miscellaneous exp's	20 00		
		29537	221 50		
		CK. R P J. Jan Notary		221 00	
		Retainer fees		200 00	
		Sent Registered		200 00	
		2-24-16		621 00	

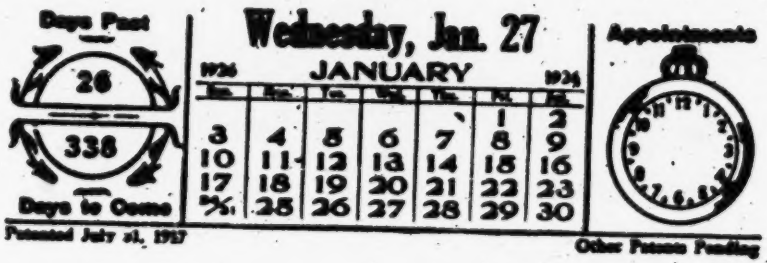
~~Jarrett Hotel~~

A. M.

Serial 200 Salary -
in 224 expense -
421

extra 200
$624

~~$1100~~



31-A

DATE	FOLIO	ITEMS	DEBIT	CREDIT	BALANCE
2/24/26	2/28	Jarrett Hotel Room & Board	18.00		
2/28/26	3/7	" " " "	18.80		
3/7/26	3/14	" " " "	18.00		
		Meals	63.00		
		Electric to Department's account (?)	7.55		
		Department miscellaneous exp.	22.95		
		Auto hire to Department miscellaneous exp.	28.30		
		Coal to miscellaneous dept.	45.90		
		Auto hire to Department miscellaneous exp.	19.30		
		Total	$296.10		
				336.00	

Mailed Saturday
Mar. 13 1926
JGA

24

DATE	FOLIO	ITEMS APR 12 1926	DEBIT	CREDIT	BALANCE
3/17 to 3/21	3/21	Plaza Hotel, Room etc	17.70		
3/21 to 3/22	3/22	" " " miscellaneous	61.05		
3/22 to 4/6	4/6	" " "	18.90		
		Meals, 45 days average 3.00 per day	45.00		
		Electric to Beaumont & return (10)	10.80		
		R.R. to Houston, Pd. & return (8)	15.20		
		Hotel, Meals, miscellaneous exp's	38.95		
3/17 to 3/22	3/22 to 4/29	Plaza Hotel, Room miscellaneous exps	29.35		
		R.R. from Galveston & return	7.50		
Final Balance		Beaumont miscellaneous exps	61.95		
		Long Distance Phone + Telegrams	19.10		
		March Salary	300.00		
		total.	625.00		
		DEDUCT SALARY	— 300.00		
		CREDIT TO ACCOUNT 83006		325.00	
4/6 to 4/6		Hotel Plaza, Room	17.50		
		Meals 4 days at 3.00 a day	12.00		
~~subsistence allowance for Lieutenants' Manual each~~			~~20.00~~		
		R.R. to and from Orange	10.30		
Hotel, Meals, miscellaneous exp. and RETURN			59.45		
		total.	240.25		
			— 20.00		
		Credit to his a/c	220.25		

DATE	FOLIO	ITEMS	DEBIT	CREDIT	BALANCE
		Hotel Crosby	13 25	✓	
		Meals, Autobus miscellaneous	6 15	✓	
		R.R. to Houston & Return	8 20	✓	
		Rice Hotel	27 95	✓	
		Meals	19 20	✓	
		Autobus, Miscellaneous	29 80	✓	Credited
		Retainer to KELLER	100 00	✓	to Bal
		Kellers Post A. 3 days. Retainer	70 60	✓	Account
		PLAZA Hotel 4/a. to 5/a. (3 weeks)	57 00	✓	
		Meals, 11 days	33 00	✓	
		Electric from 5 to Post-A. 7 round trips	7 55	✓	
		Autobus Post-A.	16 00	✓	
		Stationery, Rubber stamp, Postal, Box, Stamps, Notary	9 80	✓	
		Miscellaneous, including retainer of 40.00	38 50	✓	
		34255			
		charge 49955		442 00	

27

Del Mather, May 6, 1926.

Rail, Pullman to Tulsa, Okla. and Return	53.80.
Meals on train and Return	10.70.
Shreveport, Houston: Meals, Auto, miscellaneous	8.20.
Hotel-Mayo-Tulsa, Okla.	39.40
Meals, Miscellaneous (County of Jones)	33.10.
Auto hire	16.50
Typewriting (Caruna.)	60.
34553 Total-	220.70

C.C. Mather Hyer

49955

COMPTOMETER

Port Arthur, Tel. May 18th 1926.

Mr. & Mrs. Plaza Hotel, Room.	40.55
Meals 12 Days at 3= p. day	36.00
Auto hire	30.25.
Miscellaneous, Meals Cinema, entertainment	22.60.
Electric to Monument & return, 8 trips	8.65
& spirit	10.00.
Total.	148.05

35015

Port Arthur, Tel. May 26. 1926.

Plaza Hotel, 7/16 to 7/23.	17.90. ✓
Meals, 6 days - 3= per day	18.00.
Electric to Monument & return, 5 trips	5.40.
Auto hire, trip to Monument and trip in Port	11.50.
Miscellaneous	30.25.
Spirits (2 pints) 35201	11.00.
Retainer, May 20th 1926	10.00
" " 24th "	100.00
" " 25th "	100.00
Total.	304.75.

Total Bill Rec. Sat. June 4th 1926.

Plaza Hotel, Room #23 & Bath.	40.90
Meals, 13 days @ 3.00 p. day	39.00
Telegrams, Long Distance Phone, 2.75, 2.00, 1.85, 3.00, 2.00 - total	12.90
Publicity, Electric: 9 return trips, 9.00, Solo, 3.00, 4.00, 8.00, 8.00,	32.70
Miscellaneous, liquor, Cigars, incl 16.00, 3.00, 2.50, 2.00, 2.25, 4.00	31.35
total.	156.85

35928

Ref. No. 49355

June 4th 1926. Rec'd $600.00

Expense account
June 5 to June 7 for two

Hotel Rice	32.85
Miscellaneous, Houston	6.05
RR Pullman to Beaumont (2)	7.55
Hotel Beaumont	43.55
" Beaumont for helper	20.10
Auto to Port for helper	24.00
Hotel Central for helper	8.40
Auto to Port for assistant	24.00
Retainer	50.00
Electric, telegrams, long distance phone	5.75
Meals at Beaumont	21.90
Miscellaneous items, entertainment	16.50
RR to Houston for two	7.55
Hotel Crosby	6.00
Total	274.20

Credit account Subs special

4935

Expense account
June 7 to 14th inclusive.

RR fare to Galveston	1.50
RR to Houston and return	3.00
RR to Houston	1.50
Rice Hotel, Houston.	10.15
Houston, miscellaneous	2.60
Hotel Galvez	87.65
Miscl. and retainer of $25.00	34.40
RR fare to Beaumont, including Pullman for 2	10.40
Notary, stenographer for three trips	7.50
Retainer	20.00
Auto hire Galveston	17.20
Total	$ 195.90

Dubbs special

Credit account

49355

53

J

GALVESTON, TEX. JUNE, 11. 1926.

R.R. from Port to Houston, Pol. Electric	4.40.
for R.D. Humphry, R.R. from Port to Houston, Pol. Electric and Retainer 20.00	28.65.
Rice Hotel, Houston, 6/5 - 6/6 - 6/7.	32.85.
Auto hire, Houston	11.90.
Miscellaneous,	9.15.
Total.	86.95.

35945

86.95
15.6.26
243

COMPTOMETER

Beaumont Tex. 7/12.26.

Beaumont Hotel, 6/20 - 6/27. - 6/27 - 7/1. - 7/4. - 7/4.	83.60
Meals Beaumont for two 5.65 + 6.00 + 2.85 + 2.90	23.40.
Trip to Lumberton, Miss. (Capt. McCracken) Auto, Meals, Cigars, Entertaining	23.90.
Retainer to R.B. Wood, 15.00 Retainer to C.A. Brunow, 15.00	30.00.
Trip by Auto to Port (Three) Cars (two)	56.00
Beaumont Auto Servicing Co. holding crew three nights	10.00.
Hotel Houston, 12.50. for two. Hotel Rosalez for two, 2.25 + 22.15.	45.65.
Meals at Houston for two, 3.60 + 4.65 + 4.80 + 3.45 + 3.25 + 5.15 + 2.60 + 3.70 + 4.35.	34.95.
R.R. Pol. for two, Seven trips + one single	18.90.
Meals at Houston for two, 4.80 + 4.35 + 4.65 + 5.10 + 2.55	21.45.
Miscellaneous, Entertaining, Auto, Cigars. 10.00 + 11.60 + 3.00 + 3.90	27.90.
Locating Brunow at Houston, R.R. 2.55, Hotel 2.00, Meals 2.35, Auto 3.60, Telegram .75	32.25.
Total.	413.80.

Credited to acct
7/15/26

Mobile, Mob. Aug. 14, 1926.

Hotel Seamont, 7/25 - 31. + 7/31 - 8/6.	50.00
Meals in Chicago, 4.85+5.25+3.90+5.40+3.60+5.10+6.20+4.85	38.15
Sunday Ave. 1 Meal for (2) 18.60, Telegram, Cabs, miscellaneous	28.35
Hotel, Sherman	63.20
R.R. to Norfolk, 4 Meals, incidentals, Bed	48.75
Hotel Monticello, Luncheon Meals and Steamship Ticket.	59.45
Norfolk, miscellaneous, Cab. L.D. telephone, entertaining	32.55
R.R. from Baltimore to Knoxville to Wilmington, return, Meals (2)	14.05
Retainer to A.A. Wood	75.00
Hotel Emerson, Baltimore, R.R. ticket, charging upon b. to Emerson	66.60
Total	$461.10

Credited to Acct. Aug 18/26 (38310)

36

Please credit the following to C.P.Dubbs' special account.
7-28-26

Hotels	$ 92.80
Meals	18.25
RR to Chi and ret.	73.40
Hotel Chicago meals, etc.,	20.25
RR to N.Y.	22.10
Hotel N.Y.	34.40
Misel.	70.00
RR N.Y. to Texas	31.10
Hotel, Meals, etc.	5.90
RR to Beaumont	36.95
Meals on entire trip	18.10
Auto trip to PA	16.00
Retainers	135.00
Photographer	40.00
Auto at $3 per hr for 12 hours	36.00
RR to Chicago incl. Pullman	50.05
Meals, and misel.	9.95
Typewriter hire	5.00

49.55

Total $ 715.25

New-York. Aug. 25th 1926

Hotel Beaumont, 8/6 - 8/20.	50.00
Meals, train to Mobile (4)	8.30
Hotel Mobile, R.R. to Chicago	90.15
Retainer to O.O. Antoni,	10.00
Meals in Mobile	17.90
Steno. and Notary, cab. 3.75 + 4.00 + 3.35	11.10
Entertaining, Lunch, Aub. 15.70 + 2.00 + 3.50	21.20
total.	208.65

Credited to acct 8/27/26 & (38536)

August 30, 1926

Please credit the following to C.A.Dubbs' special account:

Hotel (Chicago) 2 days	$10.00
Means, cab, incidentals,	15.70
RR to Indianapolis and NY	50.95
Hotel (Indianapolis)	5.00
Meals, auto hire, Miscl.	14.90
Meals on train	7.10
Total	$ 103.65

ok

Chicago, Sept 1. 26.

Tips Meals, outside of Hotel	53.85.
Tips to Bayonne, Hob Rothmere, Meals, incidentals	24.30.
Miscellaneous to P.O. employe Bayonne	10.00
" " " New York	10.00
Hotel Commissions	81.20
	48.90
incidental and Miscellaneous Exp.	33.30
R.R. and Meals to Chicago 53.30 + 3.25	56.75.
total.	315.20.
	315.30

Miller
Aug 31

Broward, Ex. Sept 26.

Meals, R.R. to New Orleans, Boston, 95¢ + 48.20 + 17.00	71.15.
Hotel New Orleans, 8.25 + 4.70	12.95.
Hotel Roza, Meals, party 6.	198.65.
Outside Meals, 35¢ + 4.70 + 75¢ + 2.00 + 2.00 + 85¢ tips	20.85.
Hob hire and Taxi in Boston	72.55.
Miscellaneous, Exp. Ring 40.00 Refreshment 26.00	66.00.
R.R. to Beaumont, Cab	9.05.
Hotel Beaumont 8/20 - 8/21 8/27 - 9/5	59.80.
Retainer to Brenow 150.00 Expenses to Brenow and Vallis Coons, 50.00	200.00.
Cash advanced to Kauffman	170.00.
total	876.00

OK
28

New York, Sept. 29.26.

Hotel Beaumont, 9/5.—9/12.	31.75
Hotel Beaumont, 9/12.-9/17.	48.15
Meals in Beaumont	43.60
Electric and Auto to Port, 5.tripsI.08½2.trips 8.oo	21.40
Retainer, Brunow,$50. Advanced Exp. to Val. Coons, Brunow	100.00
R.R. to Houston and cab,9.00 Meals for (3) I2.40	21.40
Auto,2.60. Miscellaneous,Polo,3.50.Refreshm. I0.00	I8.I0
Miscellaneous,Beaumont,4.40,I.00,.80.45.70.3.50,Cigars	I0.85
Auto to Lake Charles	20.00
R.R. to L.CH.Shreveport	I6.80
Hotel Youree and Meal outside,35.80. 3.I0	38.90
Miscellaneous, Refresh.Auto.2.80.I0.00.I.00.2.I0. I.30. 4.00.2.30	23.50
	394.45

Credited 9/30/26

New York, Sept. 30.26.

R.R. Shreveport to New York.	[illegible]
Meals on Train	II.95
Miscellaneous, teleg. I.40. I.00. 75. 80.	3.95
Transport, to Brooklyn	2.85
R.R. to Bayonne, 4 trips @52¢	2.10
Bayonne Y.M.C.A.	I0.25
Miscellaneous,I.00,Cigars 3.75. Candy, I.50	6.25
Hotel Brooklyn	40.55
Meals. I5.45, 25.35	40.75
Miscellaneous, 3.60. Long Dist.Indianapolis,2.I0.4.20.5.60	I5.50
	204.20
	394.45
Total ----	598.65

Credited 9/30/26

Sept. 29th. 26.

Meals	$ .35
Trunk	10.00
Handbag	3.50
Old Clothes	1.60
Tip & Baggage & Cab.	1.15
Laundry	80.
Registered Letter	25.
	20.65

Sept. 30th.

Meals	$ .20
Keeping trunk & Baggage	1.50
Trunk to Y.M.C.A.	1.00
Tip to Y.M.C.A. Porters	2.00
Tip to Baggage	75.
Cab	40
	10.85

October 1st.

Meals	$ .45
2. Telegrams.	1.80
Tip to Baggage	.75
Cigars	60.
	8.30

Total. 39.80

O.K. E.B.

Oct. 2nd.

Meals	$ .30
Trip to Bayonne	.75
Incidentals	.65
	6.00

Oct. 3d

Meals	$ .40
Trip to Bayonne	.75
Cab	.55
Ice Cream	.80
	7.50

Oct. 4th.

Meals	$ .10.
Trip to Bayonne	.75.
2 Telegrams	1.80.
Cab Fare	.90
Y.M.C.A. Room	3.75.
	12.30

Oct. 5th.

Meals	$ .60
Hotel Madrid	10
R.R. Fare to Chicago from N.Y.	$1.30
Incidentals & Cab	1.60
	100.60
	127.00
	39.80.
Sum total →	166.80

To

192

2329

1

Los Angeles. OCTOBER, 23.1926.

Chicago, Hotel Palmerhouse	23.2o
Meals, 5.30. 4.95. 5.2o. 5.45.	20.9o
Incedentals, Cab, Telegram, I.60. I.2o. 3.oo.	5.8o
R.R. to L.A. ext. faire, 3.oo and Pul. to houston	97.25
Meals on Train, 4, meals	7.Io
Hotel New Orleans	2.5o
Meals, " "	4.85
Hotel Houston	7.65
Meals "	5.Io
Total,	I74.35

2

Los Angeles, OCTOBER, 23.1926.

R.R. Houston to Beaumont, return	7.55
Hotel Beaumont	25.8o
Meals " 5 days @.3.9o	I9.5o
Electric to Port Arthur, 4 trips @.I.2o	4.8o
Miscellaneous, 5.oo 2.8o	7.8o
Trip by Auto Port and retrum(bringing COONS)	I6.oo
Notary and Stenographer, 3.00 4.oo	7.oo
Pullman Houston to Los Angeles	I8.oo
Meals on Train, 6.	II.35
Total	II7.8o

3

Los Angeles, OCTOBER 25, 1926.

R.R. to CARTAGO, Calf. return		19.55
Pull. return		7.5o
Meals at Camp and Morharve		4.85
Auto to Camp and return		1.5o
Incidentals, Cigars, Ice cream		1.4o
	Total	34.8o
Retainer to G.H.Brumow , OCTOBER,		100.oo
	Total	134.8o

O.K. C.B.

4

Los Angeles, October 28, 1926.

R.R. to Cartago, Cal. Single		10.85.
Pullman return		7.5o.
Cartago to Mojave for (2)		14.35.
Mojave to Los angeles		3.75.
Hotel Mojave for (2) two days.		8.oo.
Meals Mojave for (2) two days.		14.2o.
Substitute to work in place for Chewning, two days		16.oo
Retainer to Chewning for loss of time		25.oo
Miscellaneous exp.		7.80
	Total	107.45.
Stenographer, 4.oo. Notary, 2.oo		6.oo.
	Total	113.45.

O.K. C.B.

Los Angeles, October 28 1926.

Hotel Clark, Los Angeles	36.85
Meals,	31.20
Apartment, Rent from Oct. 25th to Nov. 24th.	75.00
Incid. I.40,Map,2.00,Elect.to Huntington Beach,I.55	4.95
Total	148.00

Los Angeles,Cal.Nov.27,1926.

Apartment,rent. Nov.25th to Dec.25th.	75.00
Meals, Oct. 25th. to Nov. 25th,	75.00
Search of County Records,certified copy	10.75
Miscellaneous exp. in connection, Von Groeling	9.65
Electric to Watson,San-pedro,Pasadena,Richfield.	5.95
Telegram,	5.05
Cab, I.10, I.00, 0.80, 0.50	3.45
Total	184.85

L.A. Dec. 14th. 1926.

Meals, November 25th. to December 25th.	75.00 ✓
Retainer to Brunow, for November	100.00 ✓
Long Dist. Phone, November	3.90 ✓
Long Dist. Phone, December, Local 95¢, Chicago 17.20	18.15 ✓
Telegrams, Office, 2.05, from Brunow 55¢	2.60 ✓
Miscel.(Clark Report)Lunch 3.00,1.60,1.55,1.45,1.55.	9.20 ✓
Photos,(Clark Report) 3 sets 4.50	4.50 ✓
Miscel. Cigars (25)	3.50 ✓
Transportation,(Gasoline)1.95,1.95,1.95,1.00,1.95	8.80
Total	~~215.65~~ 225.65 ✓

OK
CB.

2335

DX 235

ALMOST PERFECT SERVICE

BEAUMONT, TEXAS.

Aug. 7th 1925.

Expense since leaving your City.

Luggage, Cab	1.90.
R. R + Pul.	48.85.
Meals	8.40.
Stopover, Hotel, Meals	8.20.
Miscellaneous for entertainment	18.00
	85.35

21326

Otto Dannack.

OK
City Treas. Duty

RECEIVED
AUG 17 1925
ACCOUNTING DEPARTMENT

4194 DX 236-A.

July 3, 1925.

Mr. William R. Howard,
3917 Ingomar St.,
Washington, D. C.

Dear Bill:

I understand you have not yet made connections with Keith in regard ~~to the Texas~~ matter. I appreciate that it is rather necessary to wait for Keith, but, Bill, I am worried about the delay and think it is necessary to get action at once.

Could you not persuade Keith to meet you as planned on this Texas matter at once? If you cannot do this, do you think it would be better for you to go to see the St. Louis man at once, as there may be a possibility of working out a connection through him and this delay is worrying me very much.

Will you please give this matter serious thought and let me know your decision or do you want me to see the St. Louis party, (Mr. Tantz).

Yours very truly,

CPD-LF

4195 DX 236-B.

July 7, 1925.

Mr. W. R. Howard,
3917 Ingomar Ave.,
Washington, D. C.

Dear Bill:

Your night letter of the 7th inst., to hand this morning.

I have absolutely no faith in Keith being able to delivery anything and we cannot stand any farther delay. The only thing I see to do is for you to immediately proceed to Shreveport and get hold of the man there and obtain what information you can and work from that end, and I don't know but what it would be better to work this matter confidentially and leave Keith out of it, because he is the type

of man that can't keep his mouth shut and secrecy is the secret of success in this matter.

While you are doing this, I will get hold of Tantz in St. Louis and see what I can develop there. Let me know if you approve of this procedure, or what you have to suggest in lieu thereof, except we can't consider any suggestion that permits of any further delay.

You were to send Mrs. Egeler a full report giving the names of the different parties, etc., so she could start a file and up to date you have not done this and therefore, will you please send same immediately.

Yours very truly,

CPD:ME

4196 DX 236-C.

(Form of Western Union Telegram.)

Night Letter.

Chicago, July 9, 1925.

W. R. Howard,
3917 Ingomar Ave.,
Washington, D. C.

Retel ninth Please do not delay Texas matter longer Saturday July eleventh .If Keith cant meet you then urge you proceed without him immediately per my telegram and letter seventh This for reason am satisfied Keith can do you little or no good and no farther delay starting matter can be permitted Stop I will probably follow suggestion your telegram to leave seeing St Louis party until after report received from you subsequent Texas trip Therefore keep me promptly and fully informed letting me know definitely when you leave for Texas and where can reach you there

C. P. Dubbs

Charge 2120
87

4197 DX 237.

For mutual considerations, Maurice S. Beyt, party of the First Part, and the Universal Oil Products Company, a corporation having its main office at Chicago, Illinois, Cook County, party of the Second Part, hereby enter into the following agreement on this 28th day of September, 1927:

1. Party of the First Part hereby enters the employ of the party of the Second Part, and shall start active work for party of the Second Part on October 1, 1927 and agrees to continue in the employ of the party of the Second Part for a continuous period of ten (10) years from above date, except party of the First Part reserves the right to cancel this contract at the end of any calendar year after this contract has been in force for three consecutive years. Said cancellation shall be in writing and delivered to party of the Second Part, by party of the First Part, ninety (90) days prior to the end of the calendar year that party of the First Part elects to cancel this contract.

2. During the period covered by this agreement, party of the First Part agrees to devote his entire time, best efforts, and skill to the interest of party of the Second Part as the latter's officers may direct or request from time to time.

3. All inventions in treating petroleum oils, including both the United States and foreign rights therein, made in whole or in part by party of the First Part during the term of this agreement shall be the property of the party of the Second Part, and party of the Second Part shall bear all expenses connected therewith.

4198 Party of the First Part agrees to execute all the necessary papers to obtain patents thereon and transfer such inventions to the ownership of the Second Party and shall execute such additional papers and make such additional statements that may be necessary.

4. Party of the First Part agrees to make his headquarters at the Second Party's research laboratories located in Cook County, near Chicago, Illinois, or such other place as Second Party may elect.

Party of the Second Part is to bear all expenses of moving First Party and his family and household effects from

Port Arthur, Texas to the point Second Party selects as First Party's headquarters.

5. In consideration of the above, party of the Second Part agrees to pay party of the First Part, during the life of this agreement, an annual salary of not less than Forty Eight Hundred Dollars ($4800.00) payable, in twelve equal monthly installments of Four Hundred Dollars ($400.00), at the end of each calendar month.

6. In addition to the above salary, party of the Second Part shall pay to the party of the First Part an annual bonus at the end of each calendar year equal to not less than ten percent (10%) of his annual salary.

7. It is understood that party of the First Part is to have the necessary time and leave of absence to straighten up his personal affairs at Port Arthur, etc., and during 4199 which time he is to receive full pay, etc., to the same effect as though he were devoting his time to the Second Party's work.

Executed in duplicate.

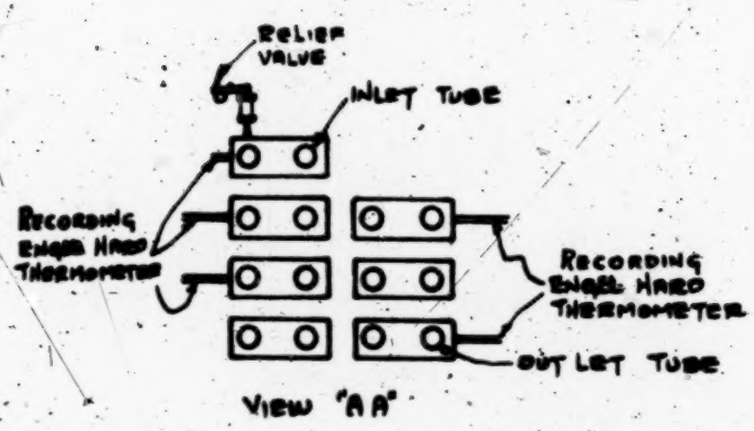
M. S. Beyt.

Jno. L. Beyt,
Witness.

Universal Oil Products Company,
C. P. Dubbs,
Vice President.

S. Olsen,
Witness.

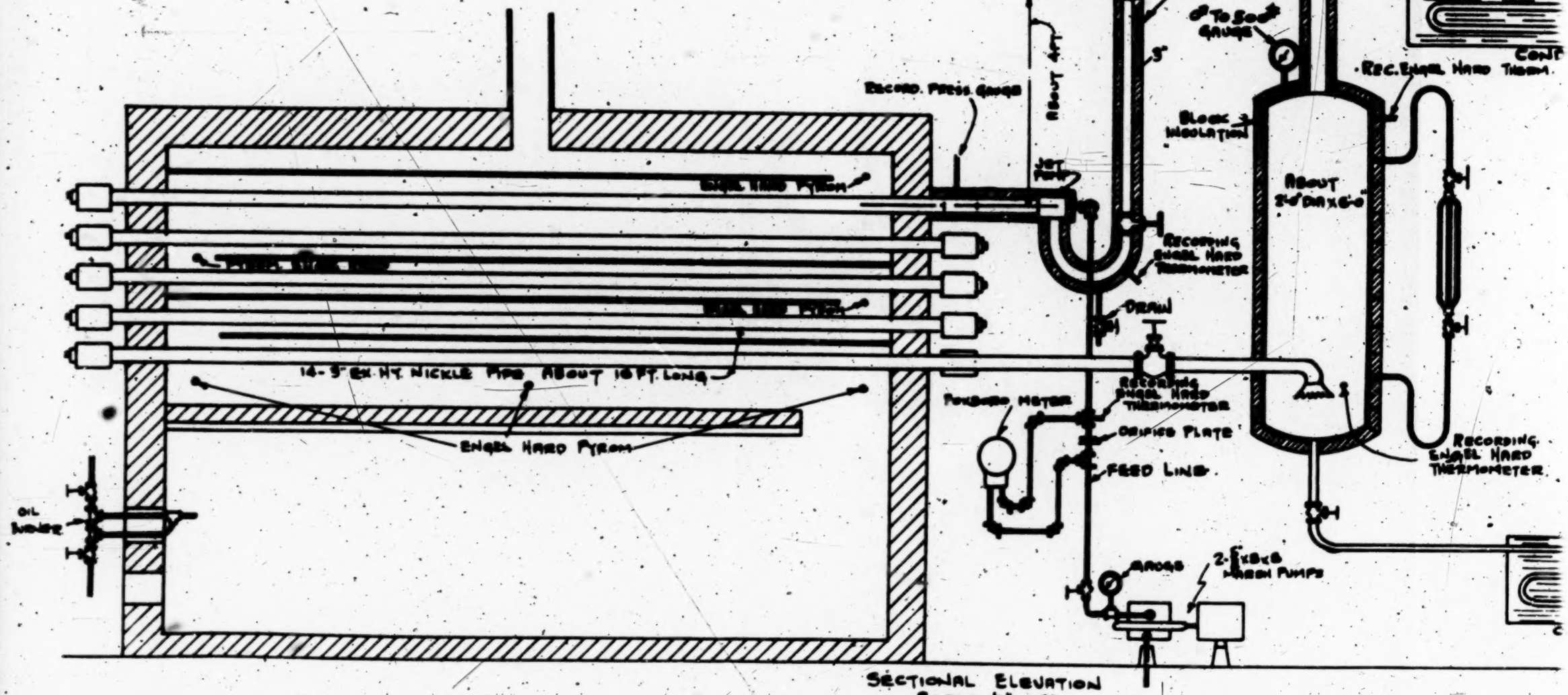
DX 239



VIEW "A A"

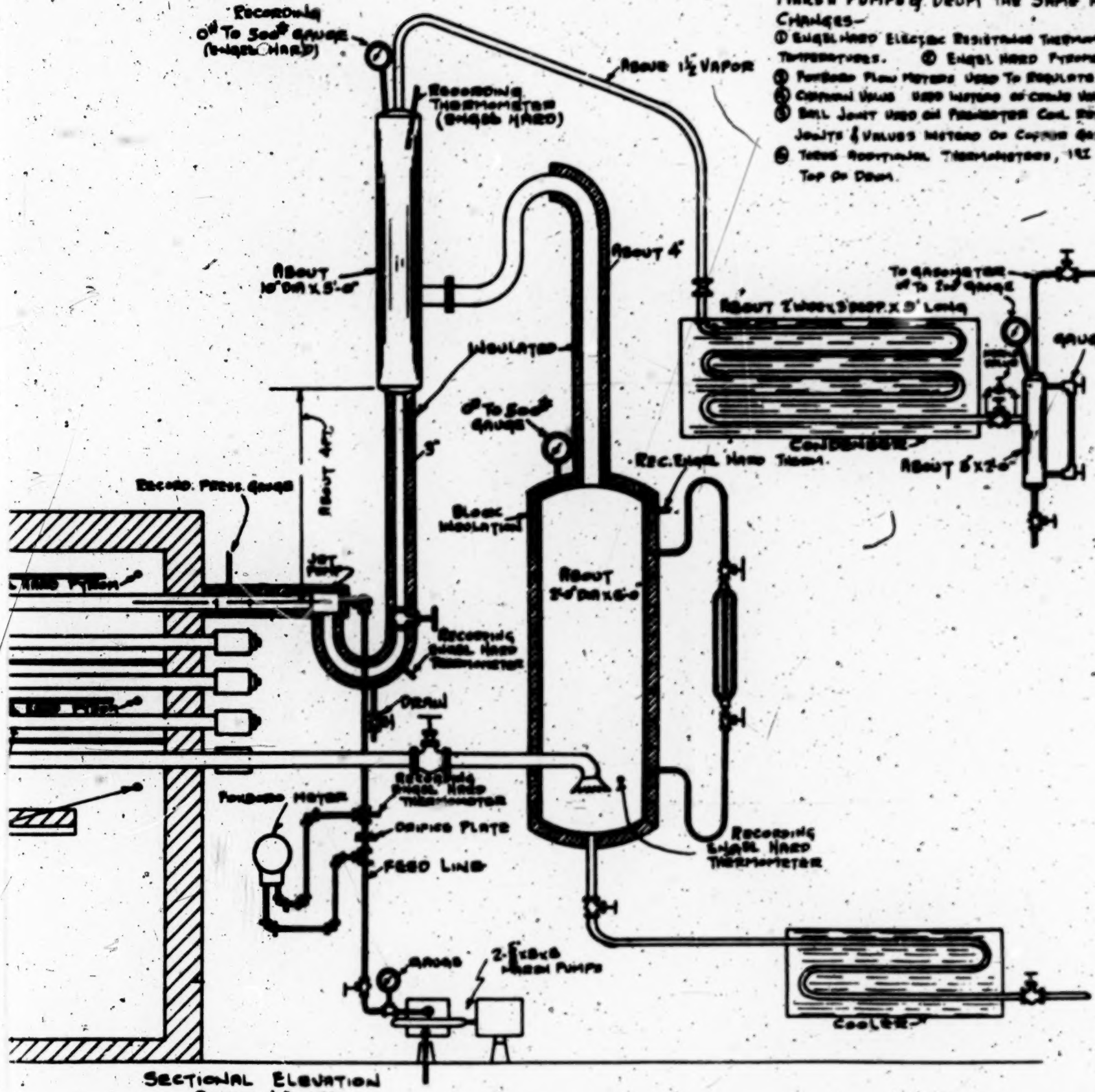
OPERATED IN AUGUST 1926 - EXPE

MARS
CHANG
① ENGI
TEMPER
② POWE
③ CHAR
④ BALL
JOU
⑤ TUBE
TOP



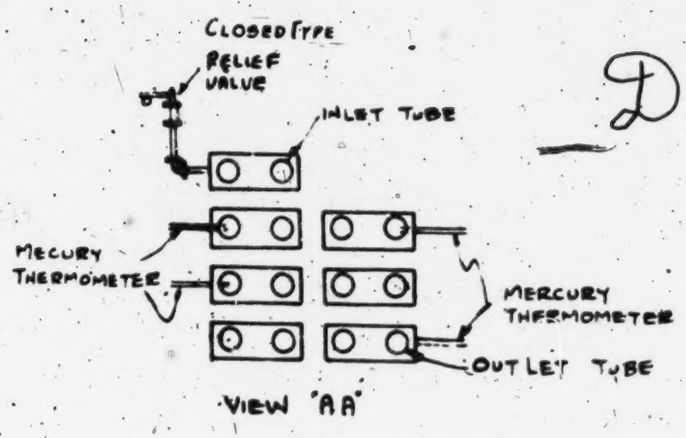
SECTIONAL ELEVATION
SCALE ½" = 12"

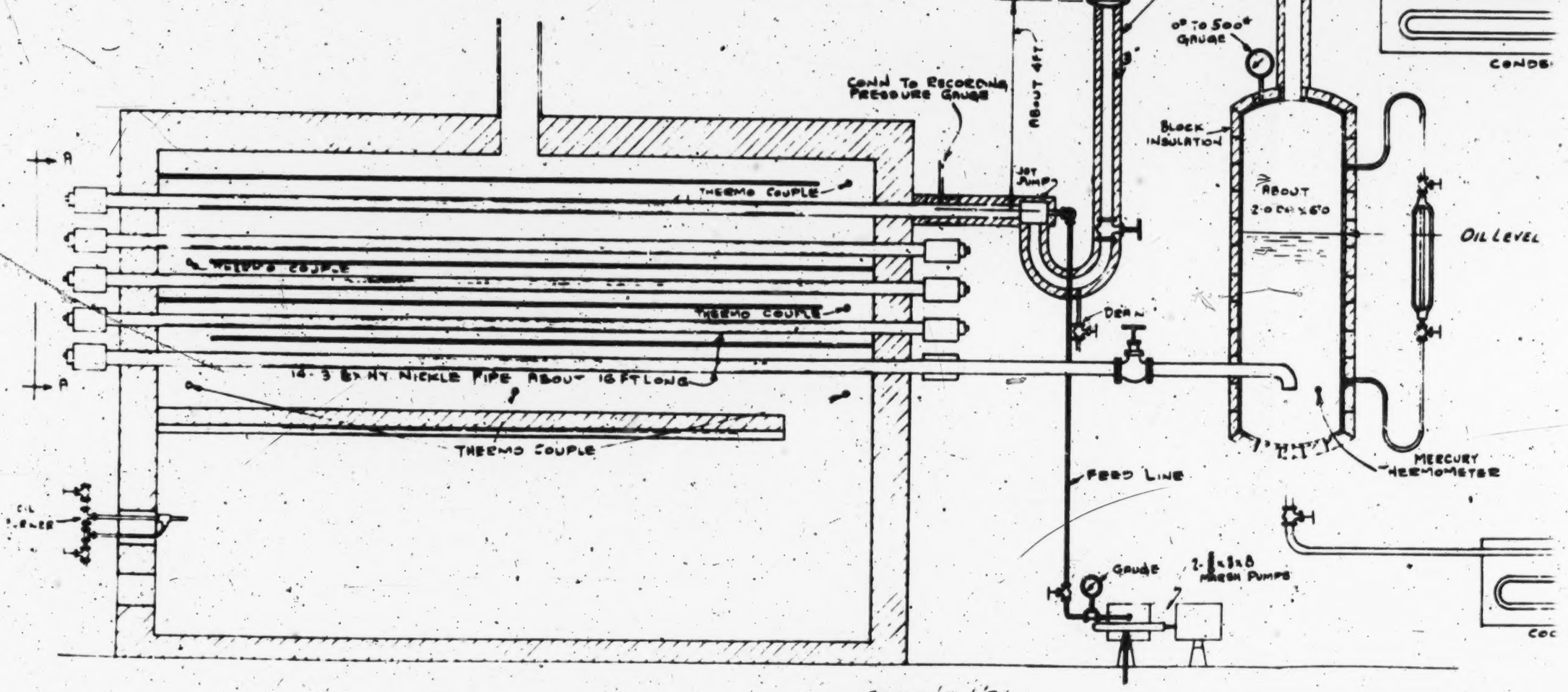
OPERATED IN AUGUST 1926 · EXPERIMENT #8 RECONSTRUCTED.-
MARSH PUMPS & DRUM THE SAME AS USED ON ORIGINAL #8
CHANGES-
① ENGELHARD ELECTRIC RESISTANCE THERMOMETERS USED FOR OIL & VAPOR TEMPERATURES. ② ENGELHARD PYROMETERS USED FOR FURNACE TEMPERATURES
③ FAIRBANKS FLOW METERS USED TO REGULATE CHARGE
④ GATE VALVE USED INSTEAD OF GLOBE VALVE BETWEEN PREHEATER COIL & DRUM
⑤ BALL JOINT USED ON PREHEATER COIL RETURN BENDS, MANIFOLD & HOT OIL JOINTS & VALVES INSTEAD OF COPPER GASKETS
⑥ THREE ADDITIONAL THERMOMETERS, 1 IN TUBE IN COIL, REFLUX LINE & TOP OF DRUM.



SECTIONAL ELEVATION
SCALE ½" = 12"

DX 240





SCALE ½" = 1'-0"

2345

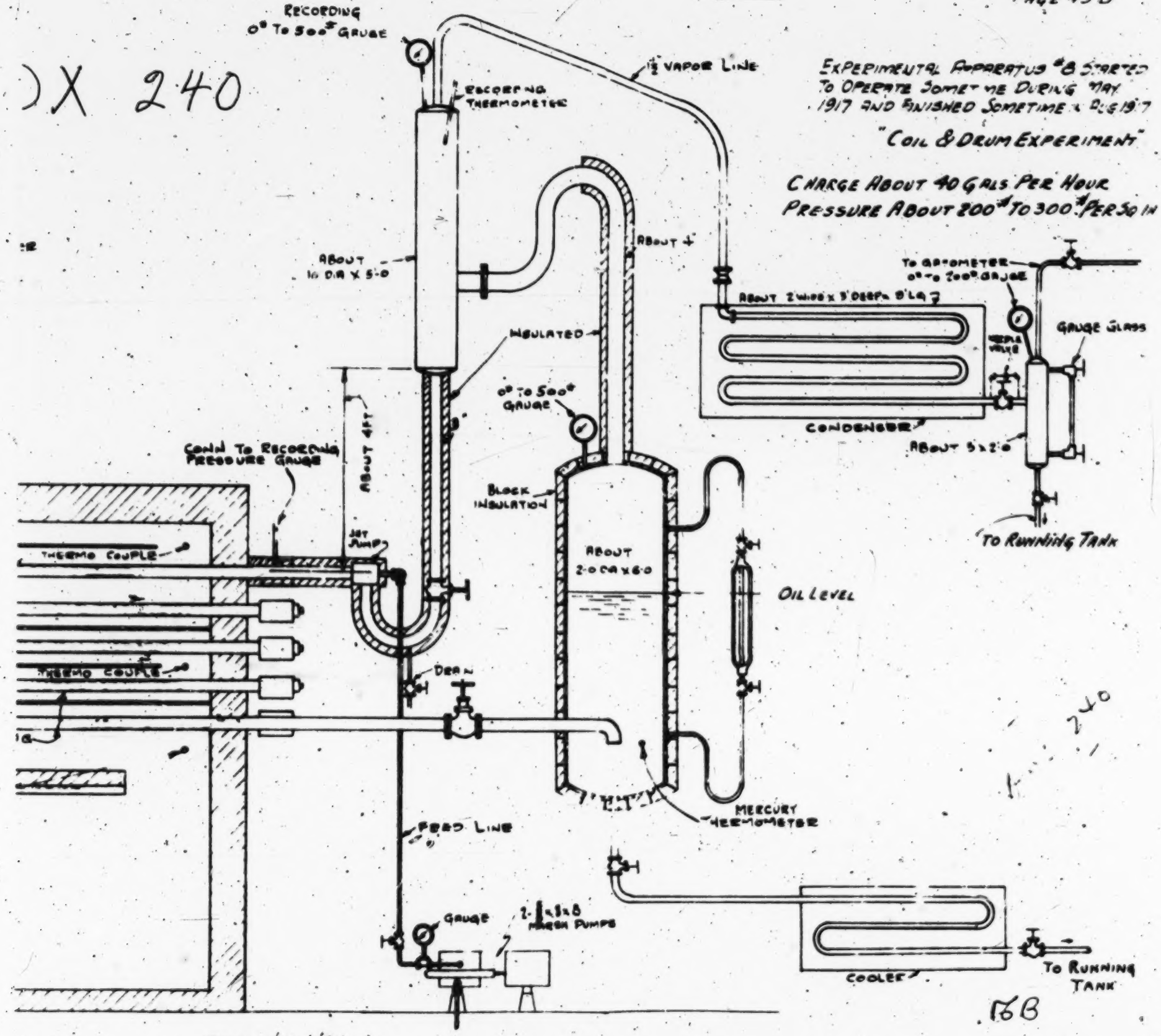
PAGE 43-B

)X 240

EXPERIMENTAL APPARATUS "B" STARTED TO OPERATE SOMETIME DURING MAY 1917 AND FINISHED SOMETIME DEC 1917

"COIL & DRUM EXPERIMENT"

CHARGE ABOUT 40 GALS PER HOUR
PRESSURE ABOUT 200# TO 300# PER SQ IN



SCALE ½" = 1-0

16B

4202 DX 241.

[This exhibit was offered and is included in the appeal record under the provisions of Rule 43(a).]

C. P. Dubbs
905 Greenleaf Avenue
Wilmette, Illinois

Independence, Kansas,
August 21, 1918.

Mr. R. C. Holmes, Vice-Pres.,
The Texas Company,
17 Battery Place,
New York City, New York.

My Dear Mr. Holmes:

Re Gasoline Process.

As suggested to you while in New York, it would be better to use heating coils positioned in a furnace separate from the stills. Herewith enclosed are drawings showing only general outline of such a plant with description of its operation.

This construction will be considerably better and cheaper than a plant having the heating tubes in the still proper or all positioned in one furnace, similar to Wicks or Heine boiler construction.

Every test we have run on small plant shows residuum collects in the last still in the series, and it is this residuum that contains all the carbon, of which more or less is continuously drawn off with the residuum, and not allowed to accumulate in still as is the case in batch run processes. Note that the enclosed drawings provide for two separate furnaces, each containing heating coils, this so that one coil can be cleaned while hte other coil is in use and the plant thus kept in continuous operation. Also this arrangement provides that in the event of one coil burning out, the other coil can be used and in the meantime the burned coil repaired and in this manner the rest of the apparatus is main-

tained in continuous operation. This arrangement avoids the loss of the use of the plant during such interval and which is a big item.

4204 Another distinct advantage in having heating coils situated separate from the stills allows for complete insulating of each still, there being long periods during which the hot vapors that are passed through the cooler stills will be sufficient to maintain the desired heat in the oil contained therein, and during such periods the heating coil attached to that still will be shut off and the great loss of heat from radiation through such heating coils into said furnace will be completely avoided. In an arrangement where still is not separate from coils, during such periods that the fire is turned out of the furnace, the loss of heat by radiation from the oil through the heating tubes into the cold furnace would be very great and no practical way to prevent it.

Another point, which I have not shown on the enclosed drawings, is that by placing the heating tubes in a separate furnace provides for making an ideal arrangement for utilizing the heat from the spent combustion gases coming from the furnace to preheat the air supplied to said furnace, thus saving considerable in fuel.

The principals involved in my process are sound and you can not afford to make the mistake of letting it get away from you. It must be kept in mind that this process is the result of many years of experience and experiments and I did not submit it to you until I worked it out.

Being the creator of this process and having gone through all the experiments leading to its success, I would be the proper one to take charge of designing, installing and operating the first unit and while it will be most difficult

4205 for me to arrange to do this, yet if you people are ready to enter into a contract, I will endeavor to arrange my other affairs so I can take entire charge of designing, erecting and operating the first unit for you.

If anything is to be done between us on this process it will be necessary to act at once and I would appreciate your advising me accordingly.

Could you arrange to meet me in Kansas City and draft up contract?

The enclosed drawings and specifications, you understand, are patent application matters and are therefore confidential.

Now don't make the mistake of letting this slide for I purposely held it in such shape that I could do business with you, and you realize that it is the only process so far, that goes to the very root of conserving the heat.

A run just completed on heavy California oil gave us a yield of 46% gasoline, having an end point of 400° F.

A patent has been allowed in Mexico, Canada and Great Britain, and other patents are pending.

Awaiting your early reply and with kindest regards, I remain

Very truly yours,

C. P. Dubbs.

CPD/H

4206 SPECIFICATION.

Figure 1 of the drawings is a side elevation. Figure 2 is a plan view, and figure 3 is a side view of the heating coils and furnace. I have only shown three stills, it being understood that any number may be used and I would suggest a unit of six, although a unit of four has given very efficient results. A, A1, A2 and A3 are pipe coils situated in furnaces B, B1, B2 and B3. Leading from these pipe coils to vertical stills C, C1 and C2 are pipes D, D1, D2, D3, D4, D5, D6, and D7, and on these pipes are positioned valves E, E1, E2, E3, E4, E5, E6, E7, E8 and E9. Each of the vertical stills is fitted with manhole openings F, F1 and F2 and with temperature gages G, and with pressure gages H, and liquid level gages I. The vertical still C is fitted on top with a reflux condenser J, by means of pipe J1. This reflux condenser has a compartment on the bottom marked J2 and a compartment on the top marked J3, which compartments are connected by means of pipes J4 and around these pipes is a housing marked J5, having doors marked J6. From the top of manifold J3 extends pipe K having valves K1 positioned on it with the extension handle K5, said pipe K extending to water cooled coils K2 positioned in tank L. L1 is a water supply line to the tank L and L2 is the water over-flow from said tank. K3 is an extension from the cooling coils K2 to tank M and has positioned on it valve K4. M1 is draw off line from tank M and has on it valve marked M2. N and N1 are over-flow pipes from one vertical still to the lower part of the next succeeding vertical still and extends to the bottom of the stills and there con-

nects with perforated pipes N2 and N3 and have positioned on them valves N4 and N5.

4207 Describing the operation of said process, the raw oil is drawn through suction pipes R3 into pump R and forced into line R4 into interchanger S at point marked S1 and from interchanger S said oil comes out at point marked S2 and enters into the bottom of the vertical still C by means of line S2 and perforated pipe S4. The oil over-flows from this still, by means of line N and through perforated pipe N2 into still C1 and over-flows from still C1 through line N1 through perforated pipe N3 into still C2 and out of the bottom of still C2 the oil is drawn through line T into header S5 and through pipe S6 into header S7, and from there drawn through line T2 through valve T3 and discharged into any suitable storage, such storage not being shown. The height of the oil in the vertical still C, C1 and C2 can be controlled by valve T1 or T3, the idea being to keep the height of the oil in stills C, C1 and C2 at or a little above the over-flow line N and N1, valves E, E1, E2, E3, E4, E5, E8 and E9 are open and fire placed in furnaces B, B1 and B2. Valves E6 and E7 are closed. The oil in still C is heated by circulation, by convection, or if preferred, by force pump through the heating coils A in the furnace B, the oil flowing from the still C through line D1 into the bottom of the header Z and then through the tubes A through the header Z1 and from this header through line D back into still C. The oil in still C1 and C2 being heated in the same manner in the furnaces B1 and B2. Still C2 having an extra heating furnace marked B3, this so that in case a coil in one of these furnaces burns out, or for any other reason that furnace may be cut out and the other one put in use while the cut out furnace can be repaired, this being the still subjected to the highest heat. For in-

4208 stance, to operate furnaces B2, valves E4, E5, E8 and E9 are open and vales E6 and E7 are closed. And to operate furnace B3 and shut off furnace B2 valves E6, E7, E8 and E9 are open and valves E4 and E5 are closed.

The vapors generated in still C pass through line J1 into header J2 through pipes J4 into header J3 and should these vapors be too heavy the doors J6 may be opened and the air allowed to circulate around the outside of the pipes J4 and thus cause more or less of the heavy vapors to be condensed and drained back into the still C. The pipes J4 may be filled with stone or such, to act as baffle plates in order to facilitate the separation and condensing of the

heavy vapors from the light and prevent the vapors from passing through these pipes too rapidly, or channeling through only a few of the pipes. The uncondensed vapors pass from the header J3 through line K through pressure control valve K1 opened by the extension handle K3, through water cooled coils K2 and from there through line K3 through valve K4 into receiving tank M and can be drawn off through line M1 through valve M2.

The unvaporized oil remaining in still C pass through over-flow line N through perforated pipe N2 into bottom of still C1 and there heated to a higher temperature. The vapors generated pass through line P1 into pump P3 and are forced into the bottom of still C through line P5 through valve P7 and through perforated pipe P9. As the vapors percolate up through the colder zone of oil such vapors having boiling points above the temperature of the oil in still C are condensed and are retained therein and thus subjected to further treatment and thus the heat given off on such condensation is fully utilized in helping to maintain the desired heat in the oil in this still.

4209 P and P1 with valves P16 and P17 are vapor lines extending from the top of the stills and connect with pumps P2 and P3 and said pumps discharge through line P4 and P5 and valve P6 and P7 into the bottom of stills C and C1 through perforated pipes P8 and P9.

R is a steam driven pump. R1 being the steam supply line and R2 the steam exhaust. R3 is the supply line to the pump and R4 having valve R5 is the discharge from the pump into heat interchanger S, as shown at S1, and S2 is the discharge from the heat interchanger into the bottom of the vertical still C and this discharge has positioned on it valve S3 and is connected with perforated pipes S4 which is inside vertical still C. From the bottom of vertical still C2 extends line T with valve T1 positioned on it, this line connecting with heat interchanger S at header S5 which header connects by means of pipe S6 to header S7 and from this latter header extends line T2, having valve marked T3. The vertical stills C, C1 and C2 are positioned on foundations U, U1 and U2 and positioned in them doors U3, U4 and U5. These vertical stills and the pipes are heavily covered with a heat insulating material as shown at U6, U7 and U8. Pumps P2 and P3 are driven by steam. The steam supply line being marked P10 and P11 with throttle valve marked P14 and P15 and the steam exhaust pipe being marked P12 and P13.

X1 are the flue breechings connecting with furnace to flue tunnel X which in turn connects with Stack X2. In flue breechings are dampers X3.

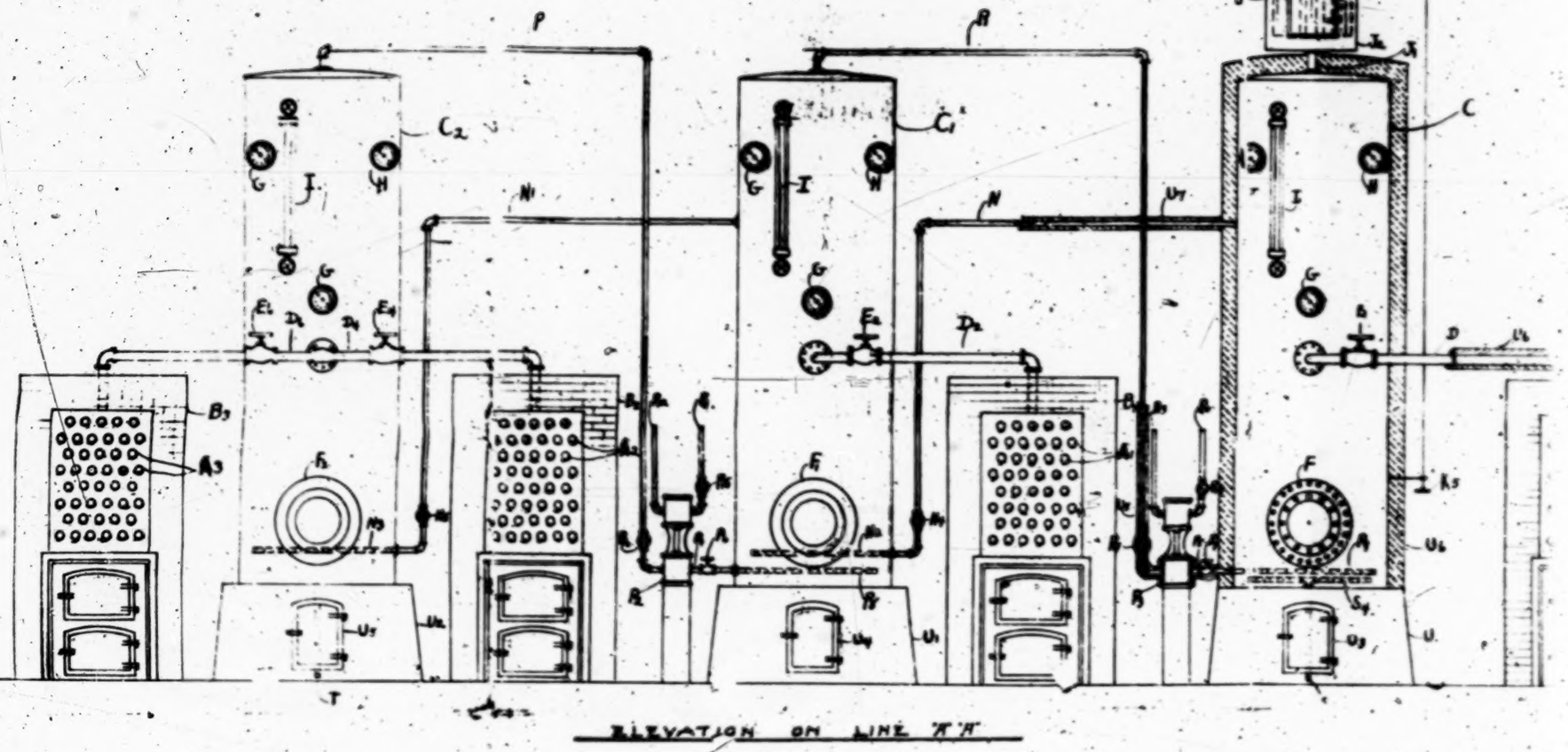
Y is the grate bars under the heating coils in the furnace and Y1 and Y2 being the furnace door openings. The tubes A being connected to header Z and Z1 from which pipes D and D1 are connected.

4210 The oil remaining in still C1 over-flows through line N1 through valve N5 through perforated pipe N3 to the bottom of the still C2 wherein it is subjected to a higher temperature. The vapors generated pass up through line P through valve P16 into pump P2 and is discharged through line P4 through valve P6 through perforated pipe P8 into the bottom of the oil in still C1, and as it percolates up through such oil that portion having boiling points higher than the temperature of the oil in this still are condensed and subjected to further treatment and the heat given off by such condensation in cooling the vapors is utilized in the same manner as is explained in still C.

The residuum will be formed in still C2 and be drawn off through line T through valve T1 into header S5 on heat interchanger S, through pipes S6 into header S7 and from this header through line T2 through valve T3 to any suitable storage and as this hot residuum passes through said heat interchanger S more or less of the heat is extracted and absorbed by the fresh supply of raw oil passing through said heat interchanger around the outside of pipes S6.

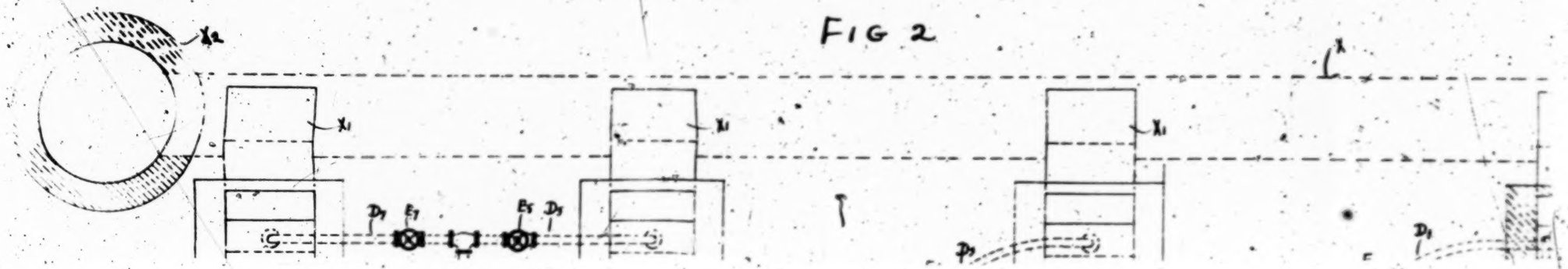
C. P. Dubbs.

FIG I



ELEVATION ON LINE 'A' 'A'

FIG 2



DX 241

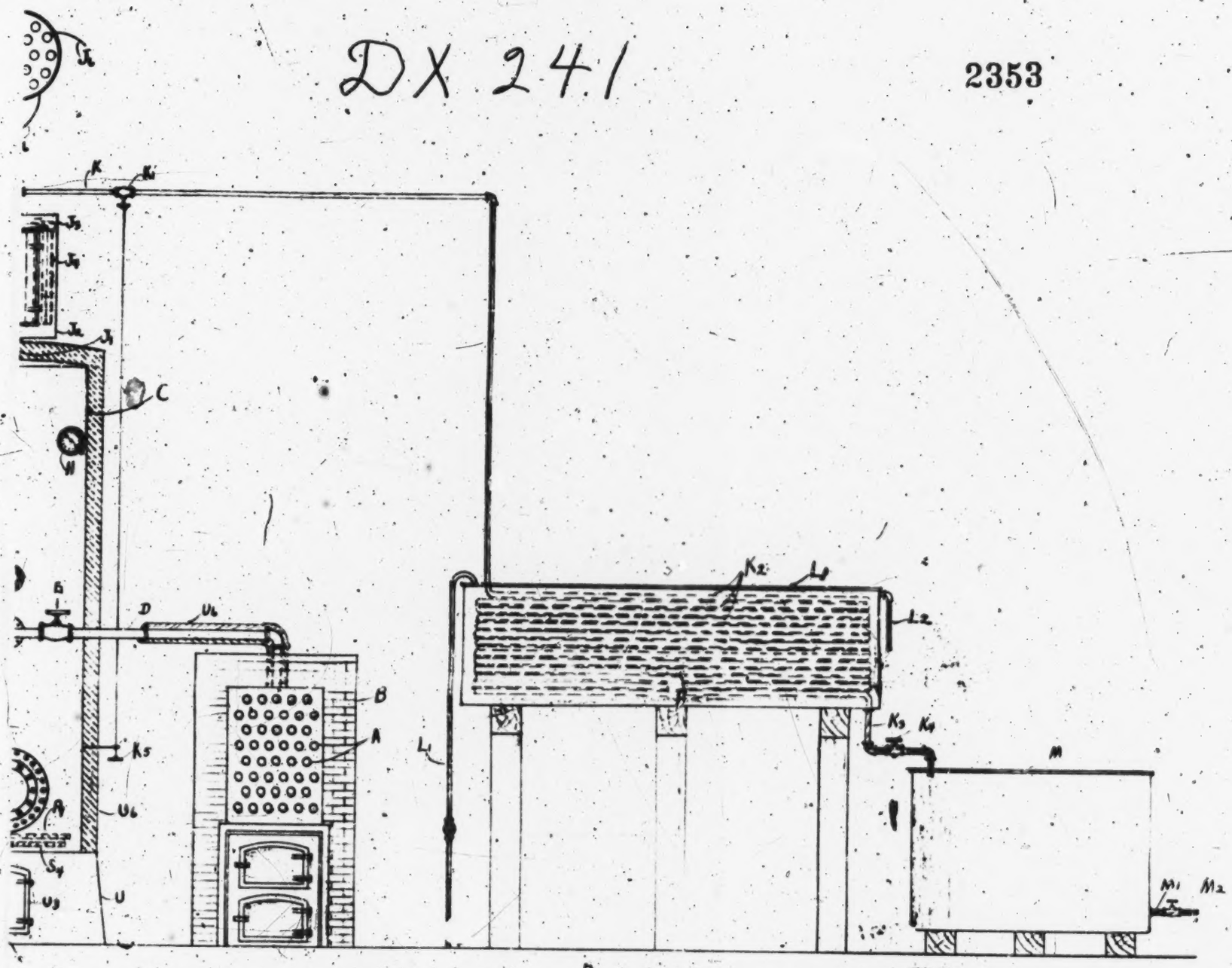
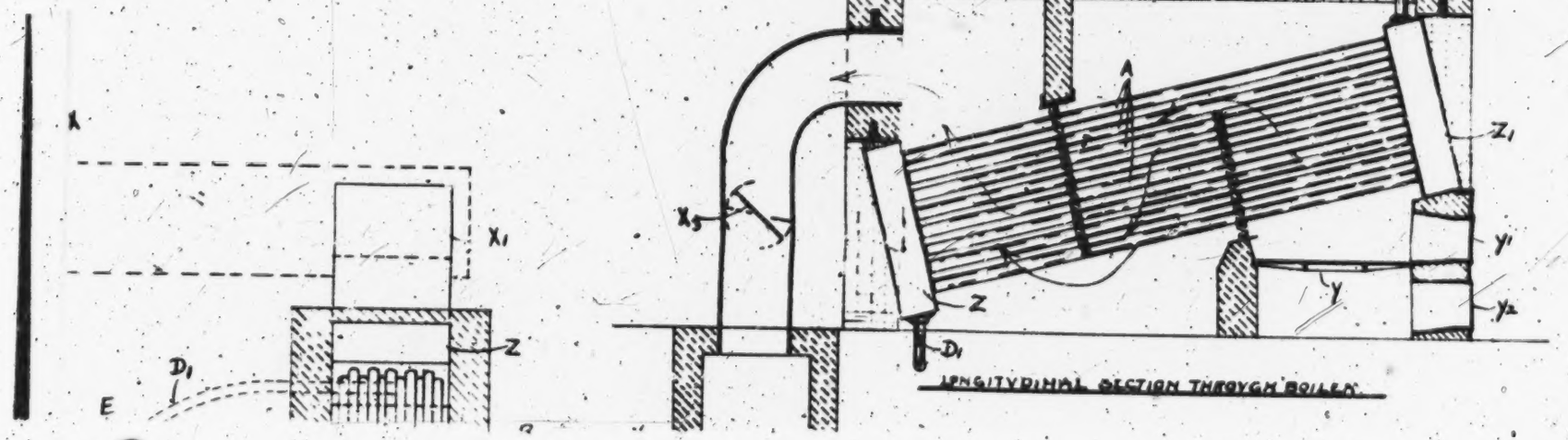
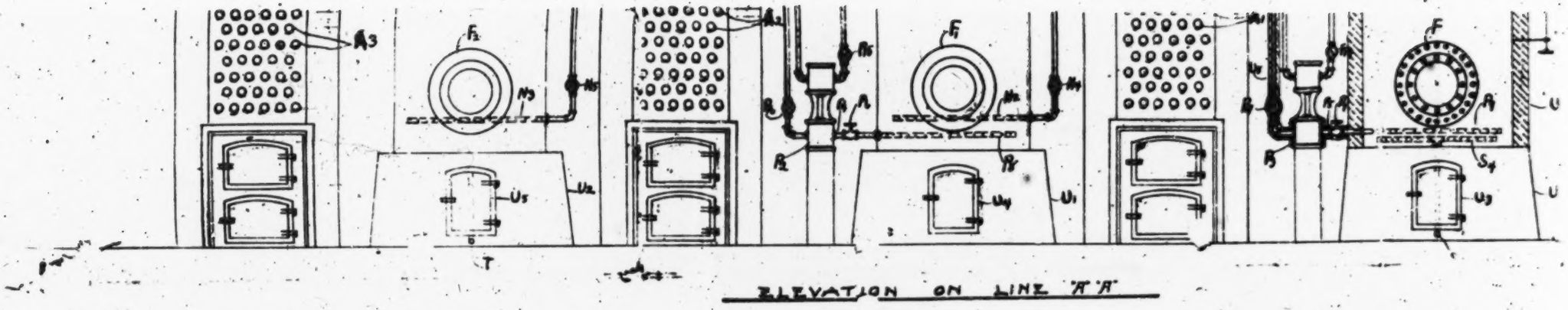


Fig. 3

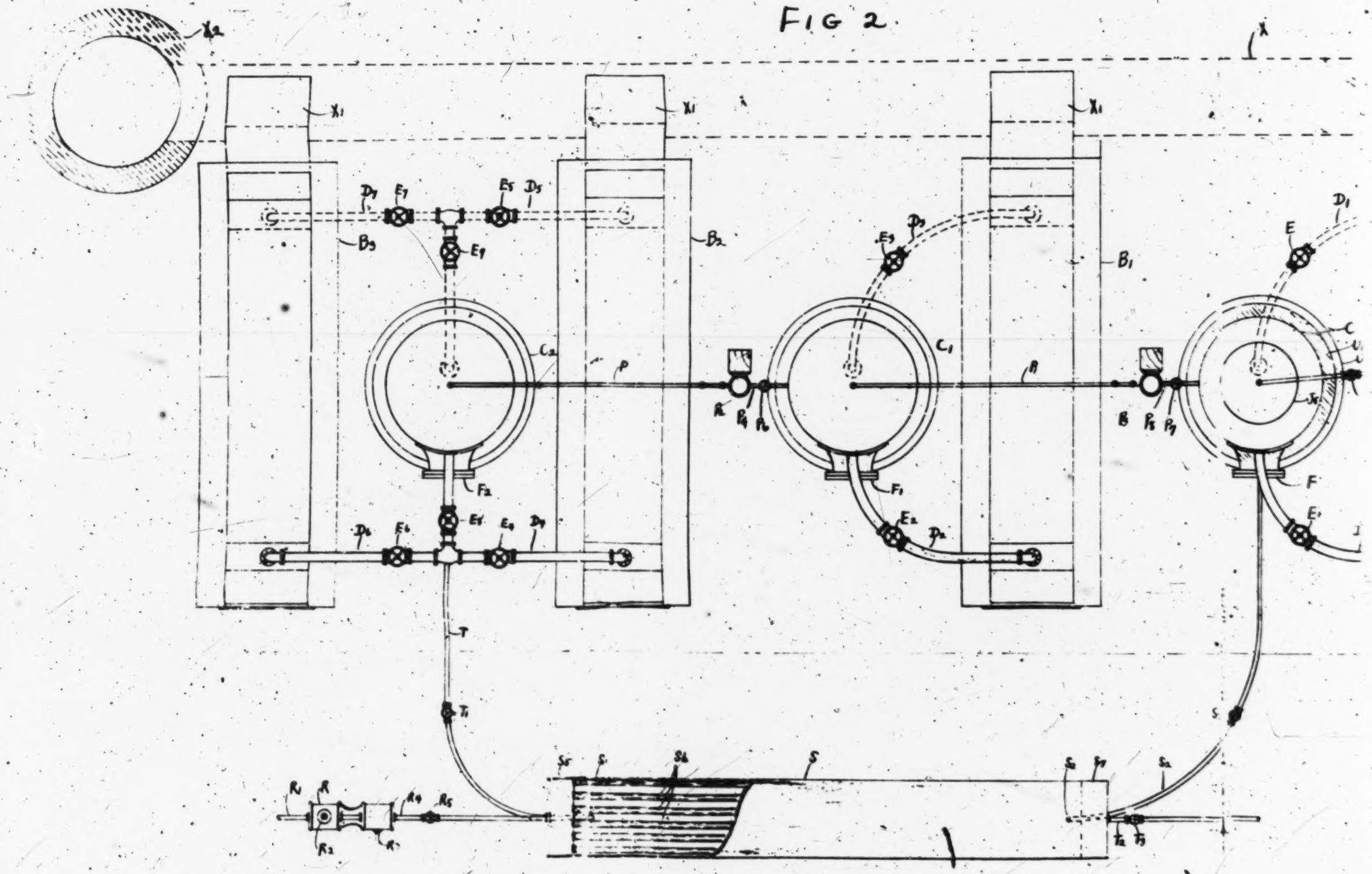


LENGITUDINAL SECTION THROUGH BOILER



ELEVATION ON LINE 'A' 'A'

FIG 2.



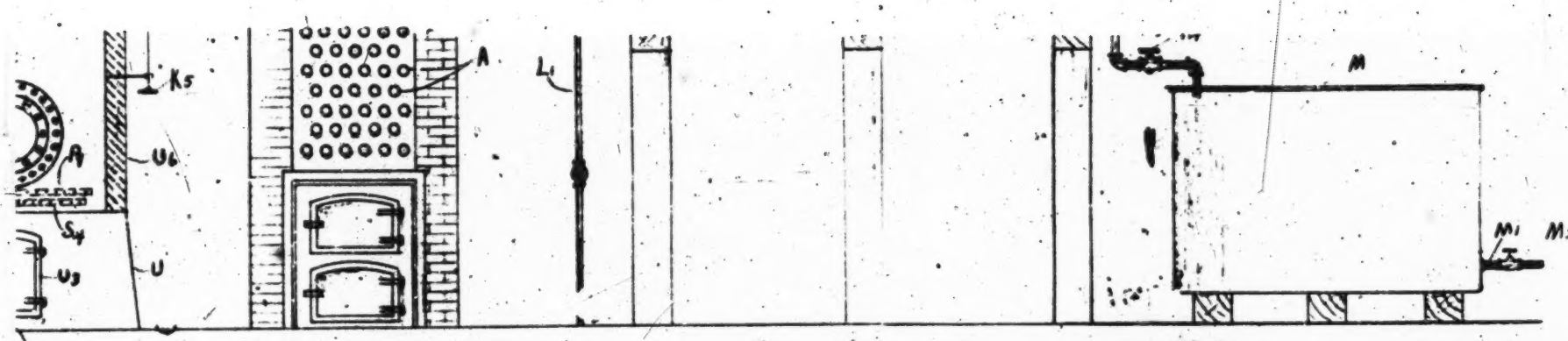
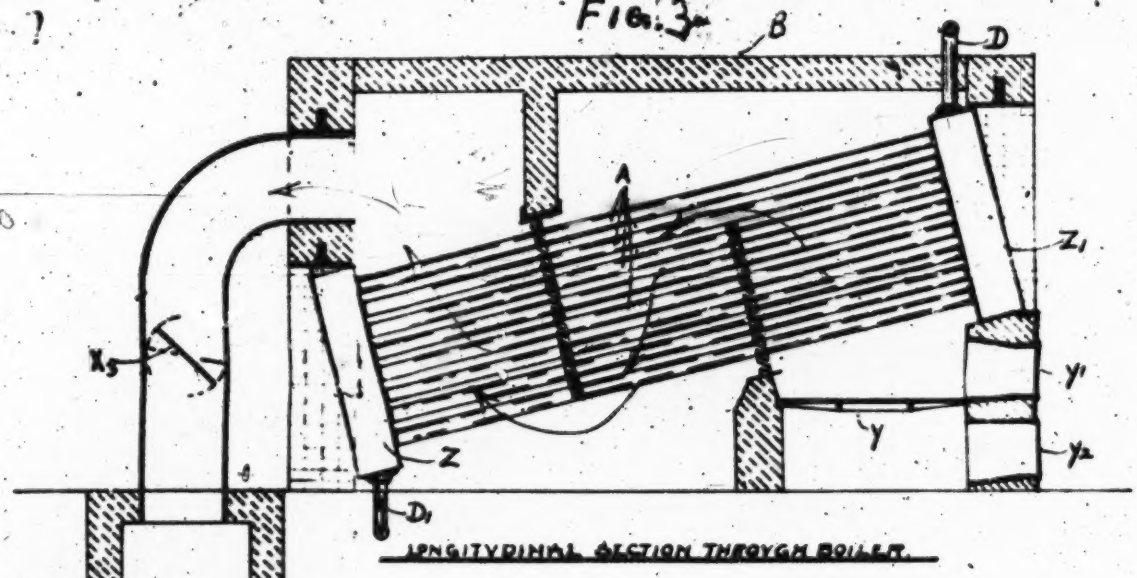
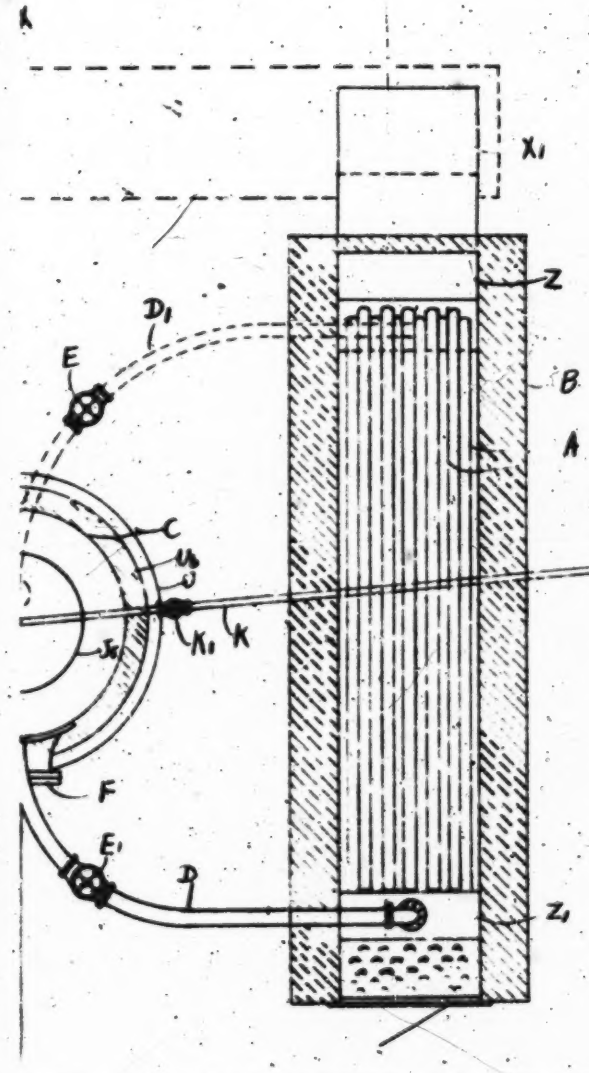
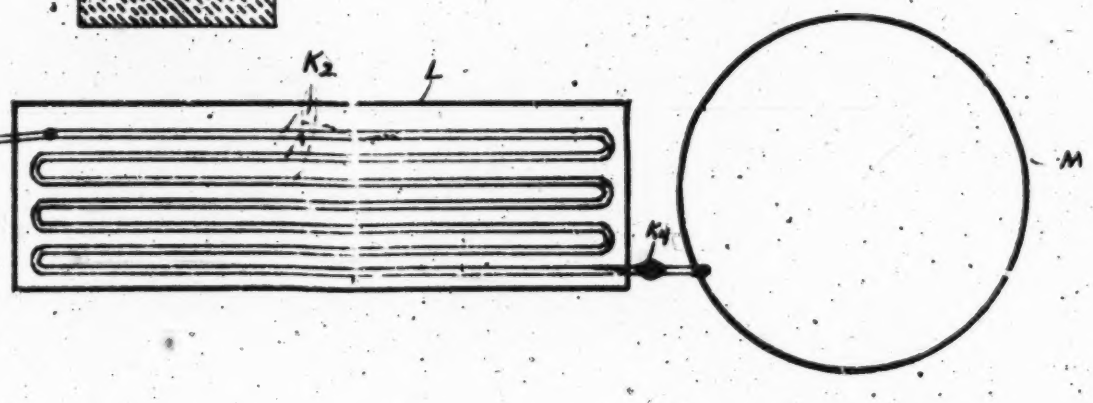


FIG. 3



LONGITUDINAL SECTION THROUGH BOILER.





DRAWINGS OF C P DUBBS PROCESS

SCALE ¾ IN = 1 FOOT

4212 DX 242 to DX 245, Inclusive.

(Agreed Statement.)

DX 242 is a certified copy of bill of complaint filed in United States District Court for the Northern District of Illinois, Eastern Division, on January 26, 1926, Equity No. 5560, by the Universal Oil Products Company, plaintiff, *vs.* The Texas Company, defendant, wherein plaintiff alleged infringement by defendant of the Dubbs 1,392,629 patent, among others.

DX 243 is a certified copy of the answer of The Texas Company, filed June 30, 1927, in the case of Universal Oil Products Company *vs.* The Texas Company, Equity No. 5560, wherein, among other defenses, Otto Behimer was set up as the prior inventor of the subject matter of the Dubbs 1,392,629 patent.

DX 244 is a certified copy of bill of complaint filed in United States District Court for the Northern District of Indiana, on January 28, 1926, Equity No. 33, by the Universal Oil Products Company, plaintiff, *vs.* Standard Oil Company (Indiana), defendant, wherein plaintiff alleged infringement by defendant of the Dubbs 1,392,629 patent, among others.

DX 245a and DX 245b are certified copies of paragraph XXX and the first counterclaim of the answer and counterclaim filed May 16, 1927, and of the amendment to answer filed July 12, 1927, in the case of Universal Oil Products Company *vs.* Standard Oil Company (Indiana), Equity No. 33, wherein Otto Behimer was set up as the prior inventor of the subject matter of the Dubbs 1,392,629 patent, and wherein defendant, by way of counterclaim, prayed that Otto Behimer be adjudged to be the first, original and sole inventor of the subject matter of the Dubbs 1,392,629 patent, and that said 1,392,629 patent be declared null and void.

4213 DX 246.

(Postal Telegraph)

"Harrisburgh Pa Aug 20 1926

M Egeler
2120 Straus Bldg Chgo

Appreciate Your Forwarding Mail to Olson Thanking You Kindly

Cal
944 AM"

(Postal Telegraph)

"Shreveport La Sept 18 1926

M Egeler
Room 2120 Chicago Universal Oil Prods

Arrived This Morning Stopping Hotel Youree

Cal
1115 AM"

4214 (Western Union)

"1926 Aug 11 AM 8 28

BRB64 10
HM Baltimore MD 11 922A

M Egeler
2120 Straus Bldg Chicago Ill

Returned Late Taking Cresent Eleven Tonight for Mobile Stopping Battlehouse

Cal"

(Western Union)

"PB 559 17 P RR Depot Wilmington Del 10 237P
1926 Aug 10 PM 1 53

M Egeler
2120 Straus Bldg Chicago Ill

Arrive Baltimore Tonight Care of Emerson Hotel Stop Leaving Tonight or Morning for Mobile Unless Directed Otherwise

Cal

4215 (Western Union)

"NG233 50 N L Norfolk Va Aug 8

1926 Aug 9 AM 6 21

M Egeler
2120 Straus Bldg Chicago Ill

Party Arrived Sunday From New York and Spent Day Together Stop Could Not Make Headway in Fact Refused Assistance Suggested to Sleep Over It Will Call in Morning Stop Almost Hopeless Ready to Leave Town Monday Night Hoping You Heard From Eastern Party If Not Will See Ward Before Going Alabama

Cal"

(Western Union)

"NG227 24 NL Norfolk Va Aug 6

1926 Aug 7 AM 6 19

M Egeler
2120 Straus Bldg Chicago Ill

Established Communication With Party by Wire and Arranged Meeting for Monday Stop Chose Monticello Hotel for Stopping Spending Sunday at Beach Returning Same Night

Cal"

4216 (Western Union)

L "1926 Jul 27 AM 9 25
RAR65 6
MN Monroe La 27 845A
M Egeler 4195
2120 Strauss Bldg Chicago Ill
Will Be in Office in Morning

Cal"

(Postal Telegraph)

"98CH MM 12
Beaumont Tex June 14 1926
M Egeler
2120 Straus Bldg Chicago Ill

Will You Kindly Mail Today Five Hundred to Three Naught Three Beaumont

Cal 257P"

4217 (Western Union)

"Received at Wilmette Ill
92 C G 38
Houston Tex 641P June 12 1926–
C P Dubbs
Wilmette Ill

Party Slated for Approach Leaving Monday Overland for East Stop Transfer Made Todays Meeting Stop Attended by East and Port and Local Celebrity Stop I Am Leaving Sunday Morning for Port Stop In the Event Will Inform You

C Smith 703P"

(Postal Telegraph)

"61CH M 36
Port Arthur Tex June 4 1926
M Egeler.
2120 Straus Bldg Chicago Ills

Saturday Sunday Monday Rice Stop Tuesday Wednesday Possibly Thursday Galvez Friday Saturday Sunday Baker Dallas Monday Tuesday Mayo Tulsa Wednesday Thursday Friday Texas Forth Worth Saturday Beaumont Kindly Give Advance Date of Arrival and Will Be There

Cal 114P"

4218 (Postal Telegraph)

"14 CH FI 18
Port Arthur Texas May 31
M E Egeler
2120 Straus Bldg
Chicago Ills

Will You Kindly Mail Today If Possible Six Hundred Stop Letter in Mail Stop Leaving End of Week

Cal 1020"

(Western Union)

"1926 Apr 9 PM 2 20
LRA264 10
UD Little Rock Ark 9 210P 6502
M Egeler
2120 Straus Bldg 310 So Michigan Ave Chicago Ill
Will Be in Your Office in Morning April 10

Cal"

4219 (Postal Telegraph)

"18CH M 9
Port Arthur Tex Apr 7 1926
M Egeler
2120 Straus Bldg Chicago Ills
I can Leave April Eighth Stop Kindly Advise Destination
Cal 1008A"

(Western Union)

1926 Aug 31 AM 12 45

NG9 41 NL New York NY 30
M Egeler
2120 Straus Bldg Chicago Ill
Leaving on Century Today Making Connection for Panama Wednesday Stop Will You Kindly Arrange Reservation and Six Hundred Will Stop Office Between Trains Stop Had Communication With Boss and Returning Temporary to Old Field Stop Thanking You Kindly for Advanced Help.
Cal"

4220 (Postal Telegraph)

"87CH M 4
Port Arthur Tex Feb 8 1926
M Egeler
2120 Straus Bldg Chicago Ills
Leaving Tonight Via New Orleans
Cal 352 P"

(Postal Telegraph)

"27CH M 29
Port Arthur Tex Apr 1 1926
M Egeler
Straus Bldg Chicago Ills
General Discussion Much Wanted But Leaving Now Would Interfere Stop Meet You by April Eight or Later Kindly Advise Where Stop Have Knowledge of There Procedure and Plans Stop
Cal 1104A"

(Western Union)

"1925 Aug 3 PM 8 16

DB 650 39 NL
Beaumont Tex 3
M Egeler
2120 Straus Bldg 310 South Michigan Blvd Chicago Ill

Have You Information on F C Fantz Stop Closely Connected During Seventeen Till Twenty Stop Now With St. Louis Firm Stop Traveling in Texas Stop Reply Immediately Stop Leaving Tonight Stop Deposit One Fifty Stop Statement Following Stop Kindest Regards

Otto Wannack"

4222 (Postal Telegraph)

"Port Arthur Tex Nov 17 1925
M Egeler
2120 Straus Bldg Chicago Ills

Kindly Wire Me Today Fifty Dollars Waive Identification

Otto Wannack
508P"

(Postal Telegraph)

"51CH M 46
Port Arthur Tex Jan 18 1926
M Egeler
2120 Straus Bldg Chicago Ills

Stopped Eating No Funds Boss Promised You Send Letter Last Monday Stop Gave to Him Expense Stop Please Wire Today One Hundred Use Postal Telegraph Stop Balance Two Hundred Forty Six Kindly Mail Stop Have Appointment Afternoon and Night Today Cannot Keep Same Without Your Answer

W
136P"

4223 (Note)

"Inter Office Correspondence
Universal Oil Products Co.

Date Aug. 3, 26.

To M. Egeler at City C. P. Dubbs special acct
From Otto Wannack at Beaumont, Tex.
Subject

Will you kindly arrange, for an advance of 900.00 (Nine Hundred) for today.

Thanking you kindly
Otto Wannack.
O.K.
C.P.D."

141.55

(Note)

"Dear Sir: 10/16. 26.

Enclosed Affidavit from Vallie J. Coons. Brunow's mailing address is P.O. Box 61. Port Arthur, Tex. Kindly send me by mail to Genel Delv. Los Angeles, Cal. $300.00. One hundred of same I will send to Brunow as per instructions from Boss. I am mailing some new names to Kaufman, for investigation. Leaving on train 101. Southern Pacific, for L. A. Sunday-night. arrive L. A. Broke.

Thanking you kindly
Cal."

4224 DX 249.

(Letterhead of The National Drilling Corporation, Lomita, California.)

Los Angeles, Calif.,
June 22, 1925.

Mr. C. P. Dubbs,
310 South Madison Ave.,
Chicago, Ill.

Dear Sir:

Will you kindly consider finding an opening in your organization. I need to work and need it badly.

I have divorced myself from the Clark process, and I would be grateful to you could you use me.

I will try hard to be worthy of your consideration and I am not looking for a snap, will gladly take the bottom of the ladder, selling, construction, or operation.

You can depend absolutely on loyalty and untiring performance. Will go anywhere as directed. I appreciate your answer soon.

Sincerely yours,
Otto Wannack,
607 Grosse Bldg., L. A.

4225 (Form of Western Union Telegram.)

Night Letter

Otto Wannack, Chicago, July 8, 1925
607 Grosse Building,
Los Angeles, Calif.

Your letter twenty second just noted on my return to city Stop Possibility using you but this can only be determined by personal interview therefore if you will meet me office Chicago about July fifteenth will pay traveling expenses East and if no deal made will pay traveling expenses back Stop If deal made your compensation will have to be low and be adjusted later according to progress made Stop Telegraph collect exact date you will be here so can arrange be in city Stop This telegram sent with full understanding you are willing accept any work we have to offer and stay with it otherwise no use your coming on.

C. P. Dubbs

Charge 2120 Straus Bldg.

4226 (Form of Western Union Telegram.)

8 1925 Jul 9 PM 2 55
A11 4 30 Blue
Los Angeles Calif. 9 1 21 3P
C P Dubbs 6368
Care Universal Oil Products Company 310 South Michigar Ave Chicago Ill

Will Require Ten Days Here To Close Up My Affairs Stop Please Advise When Convenient For You Stop Coming To Accept Any Work As Offered Stop Will Stick As Glue.

Otto Wannack.

4227 (Form of Western Union Telegram.)

Night Letter

Otto Wannack Chicago, July 9, 1925
607 Grosse Building,
Los Angeles, Calif

Suit your convenience relative coming here as any time within next two or three weeks entirely satisfactory to me but be sure telegraph me couple days before leaving advising what day you will arrive so can arrange be Chicago on your arrival or I will wire you what day I can be Chicago this for reason my movements are uncertain Best regards.

C. P. Dubbs

Charge 2021 Straus Bldg.

4228 (Form of Western Union Telegram.)

SB283 10 1925 Jul 16 PM 1 03
Los Angeles Calif. 16 1056A

C P Dubbs 5587
Care Universal Oil Products Co 310 South Michigan Ave Chicago Ill

Will Be In Your Office July Twenty First Kindest Regards.

Otto Wannack.

4229 (Form of Western Union Telegram.)

1925 Aug 4 PM 3 55

DA41 7
Beaumont Tex 4 341P 19128

M Egler
2120 Straus Bldg 310 South Michigan Blvd Chicago Ill

Awaiting Your Pleasure Beaumont Hotel Kindest Regards.

Otto Wannack.

4230 September 8, 1925

On receipt of this please advise if you will have time to go to Fort Worth, Texas, to obtain some information for me there.

If you advise that you have time, then I will write you fully.

In answering bear in mind that I do not want you to go to Fort Worth or do any other thing that will in any way interfere with or delay your present work.

Be sure and let me know at once about the above so that in case it will not be convenient for you to go I can have another party attend to it. I should judge the job would take three or four days.

With very kindest regards,

4231 September 11, 1925

Referring to the matter at Fort Worth, I think it better that you concentrate all your time on the matter you now have in hand, and besides I do not want to take any chances of your becoming known through doing any other work. Therefore, at least for the time being, I will not have you attend to this other matter.

While we are very anxious for your success in the present mission, yet bear in mind that we realize that time and patience are essential and we do not want you to jeopardize your chances of success by acting too hastily.

With best regards,

4232 (Form of Western Union Telegram.)

DA63:13 1925 Oct 31 PM 12 03

Cisco Tex 21 1124A

C P Dubbs 5800

2120 Straus Bldg 310 Michigan Blvd Chicago Ill

Leaving For East Stop May I Call On You On Arrival Kindest Regards.

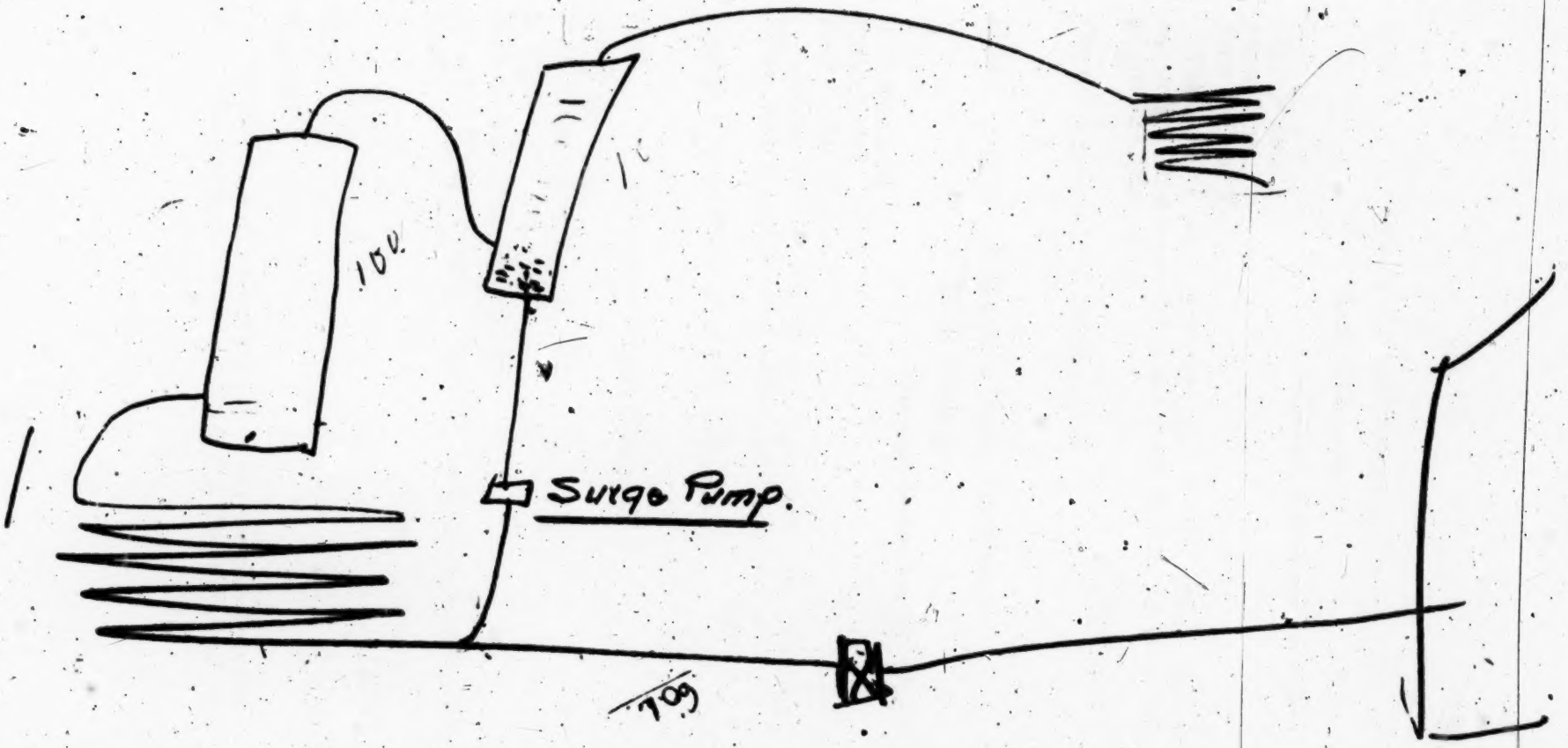
Otto Wannack.

4233 11./17. 1925.

Dear Sir:

In order to form a closer acquaintance I joined the night school, where I secured the enclosed drawing. Regarding the nosels have not yet anything to report, but feel sure that I will have the information desired. T. Co. erecting 4 new, 4 stills units, 600 lb. pressure. 3 new surge pumps arrived 30 days ago, one installed, one on foundation one in Warehouse. Otto Behimer in New York no experimented work done, at present time.

Sincerely yours.



This drawing made by Sam Rivers 1811 W. Queen St. Fort Arthur Tex. Nov. 16. 1925. 9 P.M. in class room of High school. Night class in Refinig practice. illustrative means for returning reflux by surge pump to charging stock, as used on high pressure Stills by Texas Co. Port Arthur. in general practice.

2365

4235 (Form of Postal Telegraph.)

Rush Telegram

Chicago, November 18, 1925

Otto Wannack
Plaza Hotel
Port Arthur, Texas

Yesterday's wire received after I left office Mailed registered Monday evening one forty seven Do you wish additional fifty Wire

M. Egeler.

Charge Universal Oil Products Co
2120 Straus

4236 (Form of Western Union Telegram.)

Rush Telegram

Chicago, November 19, 1925

Otto Wannack
Plaza Hotel
Port Arthur Texas

Received no answer to my wire sent you yesterday Please wire if you received letter and if you need additional

Egeler

Charge Universal Oil Products Company
19

4237 (Form of Postal Telegraph.)

20CH M
Port Arthur Tex Nov 20 1925
M Egler
2120 Straus Bldg Chicago Ill

Letter With Enclosure Recd This Morning Thank You Kindly

Otto Wannack
1123A

4238 12/8/25

Dear Sir:

I appreciate your consideration in my leaving Dec 20th, at my own expense, to Rock Island, Ill. The object of this

trip is spending the first Xmas with my daughter now 15 years old, a promise I made to her early in the year. My leaving here for that time will not interfere with my work here. During the approaching days of Xmas, little if any head will I make, due to closing of school and the leaving of one party to 17 Battery N. Y, and not returning till Jan. 5th. I may have early in Jan. complete drawings of high pressure instalation. I will return here Dec. 27th 25. Should you grant me this favor, my adds. in R. I. will be 1406 3d Ave from 22nd till 25th returning by Chi. I will be for one day in the Congress, as I would like to have you give me outline on affidavits. Awaiting with pleasure any suggestion you make as trip to R. I. is not life or death.

Sincerely yours

Enclosed card.

4239 12-11-25

Dear Sir:

Yours of the 8th to hand and fully noted.

Most assuredly you may spend Xmas with your daughter and as to when you leave there and return is a matter for you to determine yourself, as I know you will adjust this matter so as not to interfere with business.

On your return to that territory, come by way of here as this will give us a chance to talk matters over which I think will be helpful to both of us.

With kindest regards and wishing you a happy Xmas and best returns for the New Year.

4240 (Form of Western Union Telegram.)

Day Letter

Chicago, December 17, 1925

Otto Wannack
Plaza Hotel
Port Arthur Texas

Registered letter number eight one naught naught six six mailed you last night Stop Please be on lookout for same and advise by wire when received

Egeler

Charge Universal Oil Products Company

4241 (Form of Western Union Telegram.)

1925 Dec 21 PM 12 08

HSA147 7 17473
Houston Tex 21 1157A
M Egeler
2120 Straus Bldg 310 South Michigan Ave Chicago Ill
Registered Letter Received Stop Thanking You Kindly
Wannack.

4242 (Form of Western Union Telegram.)

Telegram

49355 Chicago, Jan. 2, 1926
Otto Wannack
Plaza Hotel
Port Arthur, Texas

Leaving Chicago Monday noon for New Orleans stopping Roosevelt and expect see parties there Tuesday or Wednesday.

Egeler

Charge Universal Oil Products Co.

4243 (Form of Postal Telegraph.)

13DH M 8 49355 C. P.
Port Arthur Tex Jan 4 1926
M Edger
2120 Straus Bldg Chicago Ills
With Party At Roosevelt Thursday Morning In New Orleans

C H Wannack
1031A

4244 (Form of Western Union Telegram.)

Day Letter

Otto Wannack Chicago, January 18, 1926
Post Office Box 61
Port Arthur, Texas

Expense account received today amount one six four Check being mailed immediately Stop Regarding last ac-

count amount three forty six has been credited to advances made you Advise immediately if you wish this amount sent you or if all right credit your account Stop In future please advise whether you wish reimbursement or credit

Egeler

Charge Universal Oil Products Company

4245 (Form of Postal Telegraph.)

Day Letter

Chicago, January 23, 1926

Otto Wannack
Post Office Box 61
Port Arthur, Texas

Think Advisable We Have Conference Immediately And If Matters Such You Are Not Able Come Chicago Then I Will Meet You At Whatever Place And Time You Advise Stop Wire Immediately

Egeler

Charge Universal Oil Products Company
49355

4246 (Form of Postal Telegraph.)

AB655 38 C. P. 501
Port Arthur Tex 25 1926 Jan 25 PM 6 19
M Egeler
2120 Straus Bldg 310 South Michigan Ave Chicago Ills

If Trip Not Inconvenient You By All Means Come Stop As I Would Like To Have You Meet Parties This Would Cement Relations And Establish Greater Efforts To Serve Stop By Them Meeting You And Making Acquaintance

W.

4247 (Form of Postal Telegraph.)

Rush Telegram

Chicago, January 25, 1926

Otto Wannack
Post Office Box 61
Port Arthur, Texas

I will arrive Roosevelt Hotel Neworleans Thursday noon twenty eighth and arrive Beaumont Hotel Friday twenty

ninth Stop Wire immediately if you can meet me Beaumont or if you would prefer meet me Chicago instead my meeting you Beaumont

Egeler

Charge Universal Oil Products Company

4248 (Form of Postal Telegraph.)

Rush Telegram

Chicago, January 26, 1926

Otto Wannack
Post Office Box 61
Port Arthur Texas

Will Meet You Beaumont Hotel Beaumont Texas Friday Morning Twenty Ninth Suggest You And I Have Meeting Alone Before You Suggest To Others My Meeting Them

Egeler

Charge Universal Oil Products Company
2120 Straus Bldg.

4249 (Form of Postal Telegraph.)

Rush Telegram

Chicago, February 8, 1926

Otto Wannack
Post Office Box 61
Port Arthur, Texas.

Imperative you come Chicago immediately Wire answer

Egeler

Charge Universal Oil Products Company

4250 (Form of Postal Telegraph.)

Day Letter

Chicago, March 29, 1926

Otto Wannack Personal Delivery
P. O. Box 61
Port Arthur Texas

Am leaving for Washington next Sunday and would like have you meet me there next Monday morning April fifth providing it does not interfere in any way with your plans and work as I have nothing important but just

wanted general discussion Stop Please wire me Chicago note later Friday if you will meet me Washington or not

E

Charge Universal Oil Products Co
2120

4251 (Form of Postal Telegraph.)

Day Letter

Chicago April 1, 1926

Otto Wannack
Post Office Box 61
Port Arthur Texas

Do not leave until you feel sure matters are in such shape that leaving will not interfere in any way Stop When you are ready to leave wire me and I will advise where I want you to meet me as it is impossible to tell now just where I shall be Stop Good luck and best wishes

E

Charge Universal Oil Products Company

4252 (Form of Postal Telegraph.)

Rush Telegram

C. P.

Chicago April 7, 1926

Otto Wannack Personal Delivery
Post Office Box 61
Port Arthur Texas

Can Meet You Chicago Any Time Within Next Ten Days Wire Date You Will Arrive

E

Charge Universal Oil Products Co.

4253 (Form of Postal Telegraph.)

Rush Telegram

Chicago May 4, 1926

Cal Smith, Personal Delivery
Mayo Hotel
Tulsa, Oklahoma

Both Charlie and Freds dates of jet are confirmed by T Companys engineer Capen now deceased writing Schutte

Koerting Company making inquiries for jet pump under date November twenty third nineteen eighteen

E

Charge Universal Oil Products Co.

4254 (Form of Postal Telegraph.)

Rush Telegram

Chicago, May 4, 1926

Cal Smith, Personal delivery
Mayo Hotel
Tulsa, Oklahoma

Charlie states in years nineteen fourteen or fifteen used steam ejectors for priming pumps Stop That first ejector used in oil cracking process was in spring nineteen nineteen and drawings and ejector made in fall of nineteen eighteen or spring nineteen nineteen Stop ejector made from piece forging and known as jet

E

Charge Universal Oil Products Co.

4255 (Form of Postal Telegraph.)

Rush Telegram

Chicago, May 4, 1926

Cal Smith Personal Delivery
Mayo Hotel
Tulsa, Oklahoma

Fred went work for company August nineteen eighteen Stop Making ejector for cracking plant finally decided upon in February or March nineteen nineteen Stop Made and installed west side plant about May nineteen nineteen and proved failure Stop Acknowledge receipt these three wires

E

Charge Universal Oil Products Co.

4256 (Form of Western Union Telegram.)

Cal Smith
Mayo Hotel
Tulsa, Okla.

Chicago, May 4, 1926

Leaving here midnight tomorrow Wednesday Be at Indian Refining Company or Lawrence Hotel Lawrence-

ville, Illinois Stop Expect leave Lawrenceville early afternoon Thursday and be Chase Hotel Stlouis Thursday night and Friday and leave Friday night for Tulsa Stop You keep in touch with office and I will keep them informed of any change in my itinerary

E

Charge Universal Oil Products Co.

4257 (Form of Postal Telegraph.)

Telegram

Chicago June 8, 1926

Otto Wannack Personal delivery
Galvez Hotel
Galveston, Texas
P. O. Box 303
Beaumont, Texas
P. O. Box 61
Port Arthur Texas

Will be Rice Houston tomorrow Wednesday afternoon and possibly Thursday Like very much see you

E

Charge Universal Oil Products Company

4258 (Form of Postal Telegraph.)

Rush Telegram

Chicago July 8, 1926

Otto Wannack Personal delivery
P. O. Box 303,
Beaumont, Texas

Wire immediately can you meet me Chicago about next Monday for few days conference without seriously interfering with your work

E

Charge Universal Oil Products Co.

325 PM Have sent a "report delivery" 7/10/26.

4259 (Form of Postal Telegraph.)

Chicago July 12, 1926

Otto Wannack Personal delivery
Post Office Box 303
Beaumont, Texas

Only come here at such time that will not interfere with matters there as there is nothing great importance here Stop Before coming be sure to wire ascertain if I will be here but expect be here all this week

E

Charge Universal Oil Products Co.

4260 (Copy of Telegram)

From Universal Oil Products Co.

Aug 9 1926

Otto Wannack 49355
Monticello Hotel
Norfolk Virginia

Heard Nothing From Eastern Party Therefore Proceed With Your Program Seeing Ward First If You Think Best. Stop Be Sure And Wire Advising When You Leave Each Place And Immediately On Your Arriving At New Place Give New Address So Can Always Reach You By Wire

C P Dubbs

Straight Telegram 46 Words
CPD:CMS

4261 (Form of Western Union Telegram.)

Telegram

Chicago August 13, 1926

Otto Wannack
—attle House,
Mobile, Ala.

Very important you call me by phone tonight my residence Wilmette one one seven four

E

Charge Universal Oil Products Co.

4262 (Form of Postal Telegraph.)

Chicago September 10, 1926

Otto Wannack Personal delivery
Plaza Hotel Apartments
Houston Texas

Eastern party ready for you when convenient to go there Keep this office advised where to reach you at all times Good luck

E

Charge Universal Oil Products Co.

4263 (Form of Postal Telegraph.)

Day Letter

Chicago November 10, 1926

Otto Wannack
727 South Mariposa St.,
Apartment 101,
Los Angeles, California

Positively do not go to Portarthur to see party we talked about until I advise you further as I shall probably change my mind on matter Stop Soon as you finish with Groeling start getting information in California cleaning up soon as possible keeping us advised as frequently as you have anything to report on this work Acknowledge receipt of this wire

C P Dubbs

Charge Universal Oil Products Co.

4264 DX. 307.

Agreement, dated as of the first day of April, 1939, between Universal Oil Products Company, a Delaware corporation, hereinafter referred to as Universal of Delaware, Universal Oil Products Company, a South Dakota corporation, hereinafter referred to as Universal of South Dakota, and Root Petroleum Company, a Delaware corporation, hereinafter referred to as Root.

In consideration of the execution and delivery of a license agreement between Universal of Delaware and Root, dated as of April 1, 1939, and of the premises and for other

good and valuable considerations, receipt whereof by each of the parties is hereby acknowledged, the parties agree as follows:

1. Universal of South Dakota and Universal of Delaware hereby release Root from all claims for past infringement of their respective pyrolytic cracking patent rights for Root's pyrolytic cracking operations at Eldorado, Arkansas.

2. Universal of South Dakota and Universal of Delaware shall promptly cause to be dismissed the suits presently pending in the United States District Court for the District of Delaware, entitled Universal Oil Products Company *vs.* Winkler-Koch Engineering Company and Root Petroleum Company (formerly Root Refining Company) in equity Nos. 716 and 895, and Root shall promptly cause to be dismissed its Bill in the Nature of a Bill of Review and for Rehearing, as Amended, and its Petition to apply to the District Court for the District of Delaware for leave to file such Bill in such suits, each party to bear its own costs therein. It is agreed between the parties that a final decree of dismissal shall be entered in the above entitled suits substantially in the form of the final of the final decree attached hereto and made a part hereof.

3. It is represented by Universal of Delaware that it has an agreement with The Texas Company, dated as of July 29, 1937, a copy of the pertinent provisions of which said agreement is attached hereto and made a part of this 4265 agreement, showing the extent of, and restrictions on, the rights of Universal of Delaware in said agreement of July 29, 1937, and Universal of Delaware will, to the full extent of its authority under said agreement, grant to Root the immunities, releases and rights possessed by Universal of Delaware in accordance with the terms and conditions of said agreement, dated as of July 29, 1937.

4. Root hereby sells, assigns, transfers and sets over to Universal its entire right, title and interest in and to the Letters Patent and the pending applications for Letters Patent listed in the schedule attached hereto and made a part of this agreement, together with the right to recover for all past infringement of said Letters Patent, but Root reserves to itself for its own use unlimited rights under such Letters Patent and such application for Letters Patent without accounting to Universal therefor.

5. Each of the parties covenants that when requested by the other, it will execute and deliver or cause to be

executed and delivered, such further documents as may be necessary to carry into effect the provisions of this agreement.

In Witness Whereof, the parties hereto have caused their respective corporate names to be hereto subscribed and their respective corporate seals to be hereunto affixed and attested by their respective officers and agents thereunto duly authorized.

In triplicate.

Universal Oil Products Company
(South Dakota)
By H. J. Halle
President

Universal Oil Products Company
(Delaware)
By H. J. Halle
President

Root Petroleum Company
By D. P. Hamilton
President

Attest:
W. M. Behrens
Secretary

Attest:
W. M. Behrens
Secretary

Attest:
Secretary

4266 Agreement, dated as of July 29, 1937, between The Texas Company, a Delaware corporation, acting on behalf of itself, its parent, The Texas Corporation, a Delaware corporation, and the subsidiaries of The Texas Corporation, hereinafter collectively referred to as Texas, and Universal Oil Products Company, a Delaware corporation, acting on behalf of itself and its subsidiaries, hereinafter collectively referred to as Universal.

For and in consideration of One Dollar ($1.00) and other good and valuable considerations, receipt whereof is hereby acknowledged, Texas hereby grants, releases and covenants as follows to and with Universal:

1. Whenever used herein, the following terms shall have the following meanings respectively:

The term "patents" shall mean all patents of the United

States and all foreign countries (except Japan) and transferable rights thereunder, now or hereafter owned or controlled (in the sense of having the right to grant licenses or immunities thereunder) by the corporation designated and based upon inventions made prior to July 1, 1947.

The term "cracking patent rights" shall mean all patents covering:

(a) Any pyrolytic cracking process, excluding:
  (1) hydrogenation processes,
  (2) gas pyrolysis and gas polymerization processes, and
  (3) catalytic processes;
(b) Any apparatus for carrying out any such pyrolytic cracking process; or
(c) Any products produced directly by any such pyrolytic cracking process.

The term "hydrogenation processes" shall mean processes involving or not involving pyrolysis but in which the oil is subjected to the action of hydrogen in the presence or absence of a catalyst, to a degree or extent or in a manner to secure definitely determinable hydrogenation.

The term "gas pyrolysis and gas polymerization processes" shall mean processes in which gas, as distinguished from vaporized oil, is treated for the production of liquid products.

4267 The term "catalytic processes" shall mean processes in which the cracking, measured in terms of the principal product of the process, is predominantly catalytic.

The term "subsidiaries" shall mean all corporations of which the parent company now owns, or shall acquire, directly or indirectly, more than fifty per cent. (50%) of the stock having the right to vote for directors.

For the purpose of the above definition, the stock owned by the parent company shall be deemed to include all stock having the right to vote for directors and owned directly or indirectly by any of its subsidiaries as defined above.

The term "cracking patent rights of Texas" shall mean and shall be deemed to include the cracking patent rights of Texas, Indiana, Jersey, Atlantic, Gulf and Gasoline.

The term "Gasoline" shall mean Gasoline Products Co., Inc., a Delaware corporation, and its subsidiaries.

The term "Indiana" shall mean Standard Oil Co. (Indiana), an Indiana corporation, and its subsidiaries.

The term "Jersey" shall mean Standard Oil Company, a New Jersey corporation, and/or Standard Oil Development Company, a Delaware corporation, and their respective subsidiaries.

The term "Atlantic" shall mean The Atlantic Refining Company, a Pennsylvania corporation, and its subsidiaries.

The term "Gulf" shall mean Gulf Oil Corporation, a Pennsylvania corporation, and its subsidiaries.

The term "Japan" shall mean all territory to which patents of the Empire of Japan extended on July 29, 1937.

2. Texas grants to Universal a release from all claims for past infringement and an irrevocable, unlimited, non-exclusive, non-transferable, fully paid license, under the cracking patent rights of Texas for the full term of the patents and Texas empowers Universal to grant releases and sublicenses without accounting to Texas under such cracking patent rights for the full term of the patents to any or all of the present licensees of Universal, and to any or all of the future licensees of Universal, except to any corporation, firm or partnership licensed under any 4268 or all of the cracking patent rights of Texas in any country prior to July 29, 1937, upon the following conditions:

(I) Should any licensee of Universal to which Universal shall have granted any release, license or immunity pursuant to the provisions of this agreement bring suit for infringement of such licensee's cracking patent rights against Texas, Indiana, Jersey or Gasoline, or against any licensee of any of them, as the result of acts performed by such licensee with the approval of Texas, Indiana, Jersey or Gasoline as a part of a unitary pyrolytic cracking operation licensed under any or all of the cracking patent rights of Texas, the bringing of such suit shall ipso facto be deemed as to such licensee of Universal to have terminated ab initio such release, license or immunity to said licensee of Universal under the cracking patent rights of the defendant in such suit; and

(II) The rights hereby granted to Universal under the patents covering the inventions of John C. Black are subject to the express conditions that if Universal has at the date of this agreement, or shall at any time hereafter become entitled to rights of any character in respect of such patents through, under, or by rea-

son of any license or other rights previously granted in respect of such patents by said John C. Black to Standard Oil Company (California), Pan American Petroleum & Transport Company and/or Pan American Petroleum Company, then and in such event all rights granted or purported to be granted to Universal by this agreement in respect of such patents shall forthwith and ipso facto terminate, but only to the extent that such rights shall be effective, and that if any licensee of Universal has at the date of this agreement, or shall at any time hereafter become entitled to any such rights, then and in such event all such rights granted by this agreement in respect of such patents to such licensee shall forthwith and ipso facto terminate, but only to the extent that such rights shall be effective.

4269 DX 308.

January 25, 1939

Universal Oil Products Company (Delaware)
Universal Oil Products Company (South Dakota)
50 West 50th Street,
New York, New York.

Dear Sirs:

In connection with the Agreement of Settlement dated as of the first day of April, 1939, being negotiated between your Companies and Root Petroleum Company, a Delaware corporation, we hereby agree that paragraph 2 of such Agreement of Settlement shall be modified to read as follows:

2. Root shall promptly cause to be dismissed its Bill in the Nature of a Bill of Review and for Rehearing, as Amended, and its Petition to apply to the District Court for the District of Delaware for leave to file such Bill in the suits presently pending in the United States District Court for the District of Delaware, entitled Universal Oil Products Company *vs.* Winkler-Koch Engineering Company and Root Petroleum Company (formerly Root Refining Company) in equity Nos. 716 and 895, and upon written request of Root, Universal of Delaware shall promptly take any and all steps and do any and all acts necessary or appropriate to enable Root to obtain an Order can-

celling the Supersedeas Bond posted in such suits and releasing the moneys and the mortgage deposited in escrow by Root as security for such Bond. Neither Root nor Universal of Delaware shall take any further action or proceeding in such suits of any kind or nature whatsoever without first obtaining the written consent thereto of the other, and all proceedings, other than those referred to in the first sentence of this paragraph, heretofore had in such suits or either of them shall remain unaffected by this Agreement.

4270 Yours very truly,
Root Petroleum Company
By D. P. Hamilton
Pres.

Attest:

.....

We hereby consent to the above modification of the said Agreement of Settlement.

Universal Oil Products Company
(Delaware)
By H. J. Halle
President

Universal Oil Products Company
(South Dakota)
By H. J. Halle
President

Attest:
W. M. Behrens
Secretary

Attest:
W. M. Behrens
Secretary

4271 DX 311.

(In longhand) Roof Settlement.

New York, N. Y.
January 26, 1939

Air mail

J. B. Thiess, Esq.,
Ames, Thiess, Olsen & Mecklenburger,
77 West Washington Street,
Chicago, Illinois.

Dear Barney:

This confirms my wire of last evening advising that Root Petroleum Company had just made settlement of its litigation with Universal Oil Products Company.

Because of our situation being decidedly different than any others of the group and because of pressure brought to bear by our banks and others, we felt it necessary to take this step. You will please take proper steps to dismiss any legal action against Universal in the name of our Company.

I want to assure you that I appreciate very much your efforts in our behalf during the period of this litigation and also enjoyed very much the association. I trust I will have the pleasure of seeing you from time to time. Please pass on my best regards to Mr. von Holtz, Mr. Mecklenburger and the other members of your organization.

With kindest personal regards, I remain

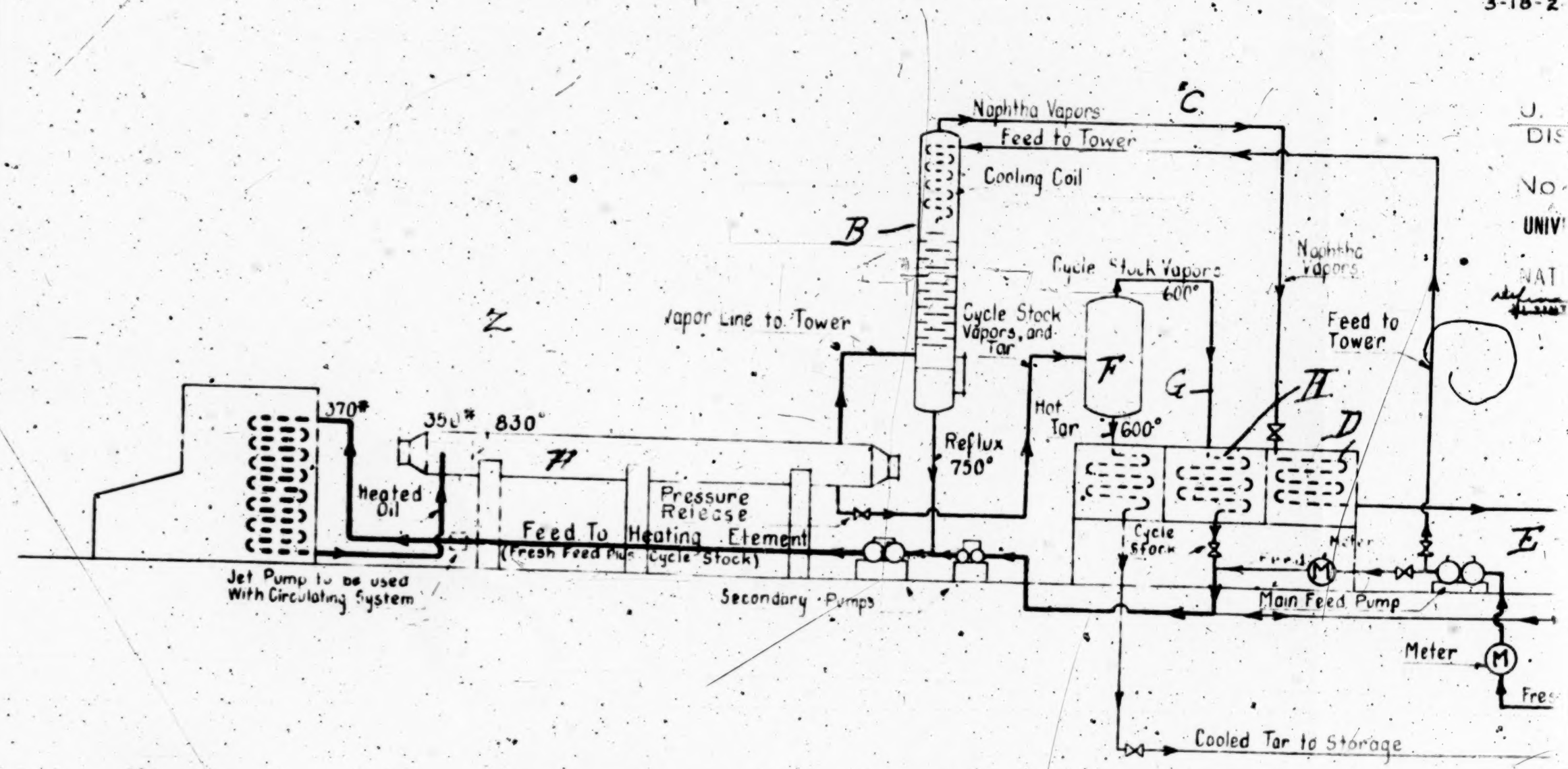
Sincerely yours,
Root Petroleum Company,
D. P. Hamilton,
President.

DPH:MB

DIAGRAMMATIC ELEVATION AND FLOW SHEET
OF A PROPOSED
MODIFIED RICHMOND CRACKING PROCESS

DX

DEVELOPMENT D
3-18-2



HEATING ELEMENT
3000 SQ.FT. EQUIV. AREA

EVAPORATOR
5'-0" x 40'-0"

TOWER
3'-6" x 25'-0"

TAR SEPARATOR
5'-0" x 10'-0"

RE
D
2'-0

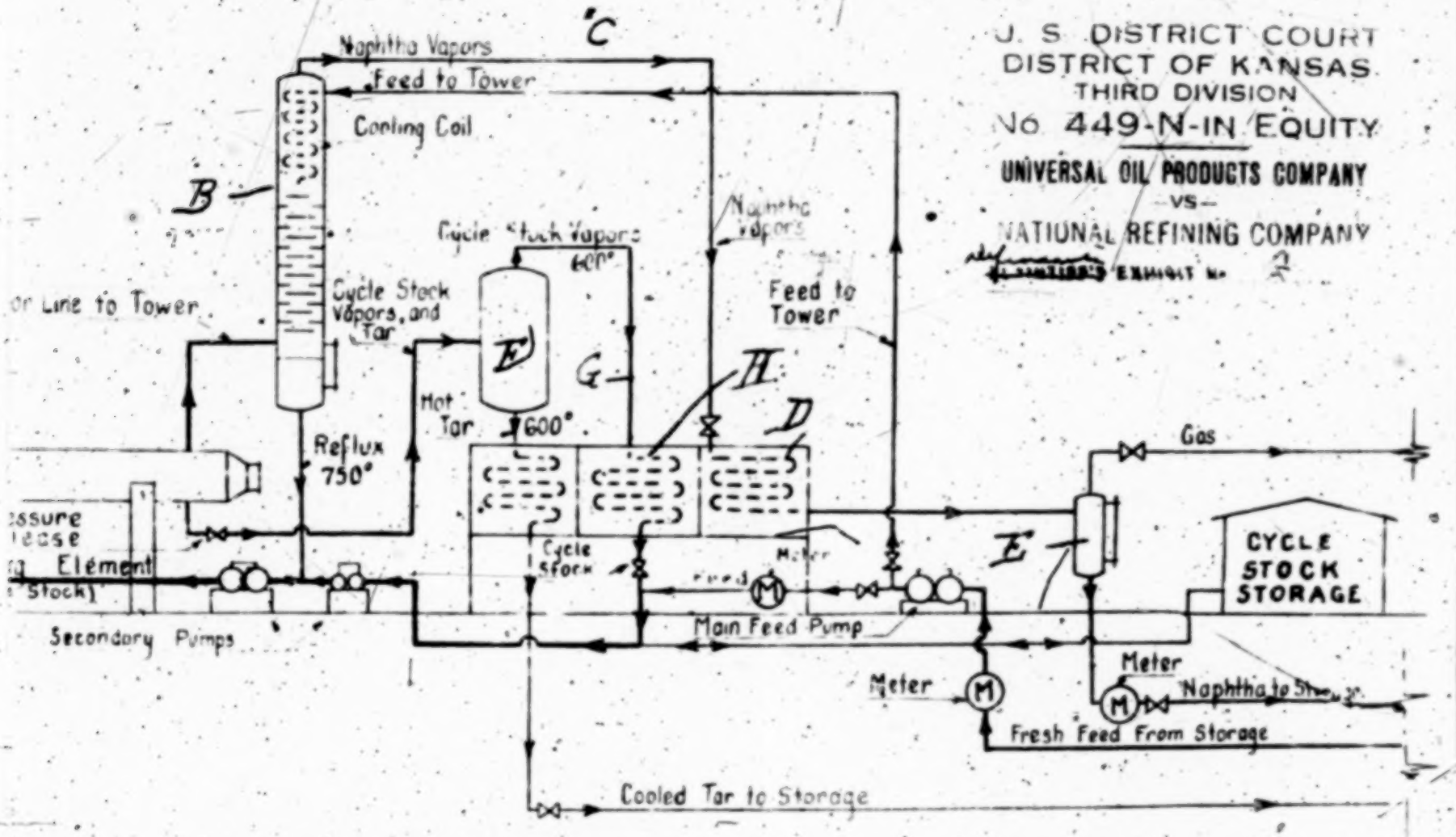
2383

DX 559

ELEVATION AND FLOW SHEET
OF A PROPOSED
IMOND CRACKING PROCESS

DEVELOPMENT DEPT.
3-18-24

U. S DISTRICT COURT
DISTRICT OF KANSAS
THIRD DIVISION
No 449-N-IN EQUITY
UNIVERSAL OIL PRODUCTS COMPANY
-vs-
NATIONAL REFINING COMPANY
DEFENDANT'S EXHIBIT No. 2



OR
0"

TOWER
3'-6"x 25'-0"

TAR SEPARATOR
5'-0"x 10'-0"

RECEIVING DRUM
2'-0"x 6'-0"

4273

DX 588.

IN THE DISTRICT COURT OF THE UNITED STATES,
(Caption—10,744)

REQUEST FOR ADMISSIONS OF FACT AND GENUINENESS OF DOCUMENTS.

Pursuant to Rule 36(a) of the Rules of Civil Procedure of the District Courts of the United States and for the purpose of the above-entitled action only, and subject to all pertinent objections to admissibility which may be interposed at the trial, defendant hereby calls upon plaintiff to admit within ten (10) days after service upon it of this request.

I.

That each of the following documents exhibited herewith is a genuine document issued by the plaintiff, or its predecessor, Universal Oil Products Company, a South Dakota corporation:

(1) "Bulletin Dubbs Cracking Process Operating Bulletin Inspection of Furnace Tubes"
Form B-512 12-10-24 Pages 1 and 2.

(2) "Universal Oil Products Company, 310 So. Michigan Ave., Chicago, Illinois. Operating Bulletin Hot Spots on Furnace Tubes & High Furnace Temperatures".
Form B-519 March 25, 1925.

(3) "Bulletin Dubbs Cracking Process
Subject: Coke Formation in Furnace Tubes at Start of Run (From Fire to Stream)"
Form B-536 1-15-26.

4274

(4) "Bulletin Dubbs Cracking Process
Subject: Steaming Out and Introducing Cooling Water in Reaction Chambers Upon Completion of Run"
Form B-538-539 Rev. 1-3-27.

(5) "Bulletin Dubbs Cracking Process
Re: Cleaning Dephlegmator Pans"
Form B-547 9-10-26.

(6) "Bulletin Dubbs Cracking Process
Subject: Inspection of Byron-Jackson Hot Oil Pump Runners for Coke Deposit"
Supplement to Form B-553 June 7, 1927.

(7) "Description and Operation of Centrifugal Hot Oil Reflux Pump"
Form D-212, pp. 1 and 2. Rev. July. 15, 1924.
with
"Universal Oil Products Company Engineering Dept., Chicago, Ill. Estimated Cost of Installing a Motor Driven Hot Oil Pump on One Standard Dubbs Cracking Unit Estimate No. 133 July 7, 1924" and "Fig. 1 'Cut of Pump'" and "Fig. 2 'Plan of a battery of Dubbs Units, showing the location of the hot oil pumps underneath the dephlegmator supporting structure'." attached thereto.

(8) "Byron Jackson Hot Oil Pumps Steam Turbine Drive Mount These Instructions on a Card for Use of Pump Operators and Mechanics With Sectional Plan #1-F-405, to Which the Part Numbers Refer Erection and Installation"
Form D-218 pp. 1, 2, 3, 4, 5. 2-20-25.

(9) "Universal Oil Products Company Chicago, Illinois. Instructions to Field Engineers Heavy Wall Furnace Tubes"
Form F-192 11-16-26.

(10) "Summary of runs on a Standard 1500 Bbl. Dubbs Unit Equipped with a 90-4" Tube Furnace and Double 10' x 40' x 1⅝" Reaction Chambers"
F. 1016 N. R.

(11) "Comparison of an Average Run on Dubbs Unit having 10' x 10' Reaction Chamber and 50 Tube Furnace with Runs on a Unit having 10' x 30' Reaction Chamber and 62 Tube Furnace."
F. 9175.

4275

(12) "Summary of runs on a Standard 1500 Bbl. Dubbs unit equipped with a 90-4" Tube Furnace, and Double 10' x 40' x 1⅝" Reaction Chamber."
F. 9286 N. R.

(13) "Summary of runs on a Standard 1500 Bbl. Dubbs unit equipped with a 90-4" Tube Furnace and Double 10' x 40' x 1⅝" Reaction Chamber."
F. 9306 N. R.

(14) "Summary of runs on a Standard 1500 Bbl. Unit Equpped with a 90-4" Tube Furnace and Double 10' x 40' x 1⅛" Reaction Chambers."
F-10136 N. R.

(15) "Summary of runs on a Standard 1500 Bbl. Unit Equipped with a 90-4" Tube Furnace and Double 10' x 40' x 1⅛" Reaction Chambers."
F-10216 N. R.

(16) "Summary of runs on a Standard 1500 Bbl. Unit equipped with a 90-4" Tube Furnace and Double 10' x 40' x 1⅛" Reaction Chambers."
F-11106 N. R.

(17) "Comparison of runs on standard 500 barrel unit without Reflux Pump but with and without U. O. P. Company Flue Gas Recirculating System."
G 865.

(18) "Summary of runs on a Standard 1000 barrel Dubbs Unit equipped with a 90-4" Tube Furnace and Double 10' x 40' x 1⅛" Reaction Chamber."
G-936 NR.

(19) "Dubbs Cracking Process. Summary of a run in a Standard 500 Barrel Dubbs Unit equipped with a 50 Tube Furnace, Reflux Pump and single 10' x 15' x 1¼" reaction Chamber."
G. 6106.

(20) "Dubbs Cracking Process. Summary of run on a 1000 Barrel Dubbs Unit equipped with a 90-4" Tube Furnace. Reflux Pump and Double 10' x 40' x 2" Reaction Chambers operated in parallel. Residuum Operation 3.42 Days. Non-residuum Operation 4.0 days."
G-6156.

4276

(21) "Dubbs Cracking Process. Summary of a run on a 1000 Barrel Dubbs Unit equipped with a 90-4" Tube Furnace, Reflux Pump and Double 10' x 40' x 2" Reaction Chambers operated in parallel. Residuum Operation 5.5 Days. Non-Residuum operation 4.5 Days."
G-6166.

(22) "Dubbs Cracking Process. Summary of a run in a Standard 800 Barrel Dubbs Unit equipped with a

62 Tube Furnace, Reflux Pump and Single 10′ x 30′ x 1⅝″ Reaction Chamber."
G-6186 N.R.

(23) "Summary of a Run in a Standard 800 Barrel Dubbs Unit equipped with a 62 Tube Furnace, Reflux Pump and Single 10′ x 30′ x 1⅝″ Reaction Chamber."
G-6256 N.R.

(24) "Summary of a Run in a Standard Dubbs Unit equipped with a 62 Tube Furnace, Reflux Pump and Single 10′ x 30′ x 1⅝″ Reaction Chamber."
G-7226 N.R.

(25) "Carbon Report & Analysis. Dubbs Cracking Process Universal Oil Products Company Chicago."
R-8 5-10-24.

(26) "Bulletin Dubbs Cracking Process Service Department
Subject: Dirty Dephlegmator Pans"
S-116 12-15-29 Pgs. 1 and 2.

(27) "Comparison of various types of oils cracked in the Dubbs Process together with gravity of Raw Oil, percent Gasoline derived therefrom, and amount of coke produced per barrel of Raw Oil Processed."
(Two pages.)

(28) "Cracking Yesterday, Today and Tomorrow Universal Oil Products Co. Dubbs Cracking Process Chicago, Illinois Owner and Licensor Copyright 1936 Universal Oil Products Co."
(Four pages.)

II.

That each of the following photostats exhibited herewith is a copy of a genuine document which was issued by plaintiff, or its said predecessor:

4277

(1) "Engineering Department U. O. P. Co. Instructions for Starting Dubbs Cracking Plant"
Form F 107 (Pages 1, 2, 3, 4, 5, 6, 7).

(2) "Bulletin Dubbs Cracking Process Service Department Pressure on System at Start of Run"
No. SR-508 6-20-32 (Pages 1 and 2).

2

(3) "Bulletin Dubbs Cracking Process Service Department Hot Oil Pumps General" No. SR-521 6-20-32 (Pages 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12).

III.

That documents each the same as those listed under subdivisions I and II were each distributed by plaintiff or its predecessor to its field men and/or operators and/or other employees or representatives and/or to its licensees.

IV.

That, prior to the filing of the Complaint in the above-entitled cause, it caused to be circulated among members of the public copies of a publication, exhibited herewith, entitled "Modern Methods in Petroleum Refining and Natural Gasoline Manufacture, Reprints of Articles Appearing in The Oil and Gas Journal, Tulsa, Okla." as appears from the tab pasted on the index page and bearing the legend "Compliments of Universal Oil Products Company Owners of the Dubbs Process 310 So. Michigan Ave Chicago, Illinois," an original of said publication being exhibited herewith.

The documents exhibited herewith will again be produced for inspection by plaintiff upon reasonable no-
4278 tice at the offices of defendant's attorneys on any day within ten (10) days after the service of this request.

Thiess, Olson & Mecklenburger,
Attorneys for Defendant, Globe Oil & Refining Company,
77 West Washington Street,
Chicago, Illinois.

Dated: 1940.

Service of the foregoing Request for Admissions with documents referred to therein and exhibited therewith and Receipt of a copy of said Request for Admissions with photostatic copies of the documents listed in subdivisions I and II thereof, and a photostatic copy of the cover of the publication referred to in subdivision IV thereof, bearing the legend "Modern Methods in Petroleum Refining and Natural Gasoline Manufacture, Reprints of Articles

Appearing in The Oil and Gas Journal, Tulsa, Okla." and the index page of the said publication with tab pasted thereon bearing the legend "Compliments of Universal Oil Products Company Owners of the Dubbs Process 310 So. Michigan Ave Chicago, Illinois" and of the article entitled "Much to Learn About Cracking" appearing on pages 27, 28, 29 and 64 of said document, are hereby acknowledged this 29 day of February, 1940.

A. H. Rushman,
Attorney for Plaintiff, Universal Oil Products Company.

4279 (Endorsed) In the District Court of the United States. • • (Caption—10,744) • • Request for Admissions of Fact and Genuineness of Documents. Filed Aug. 9—1940. Hoyt King, Clerk.

4280 DX 589.

IN THE DISTRICT COURT OF THE UNITED STATES.
• • (Caption—10,744) • •

PLAINTIFF'S ANSWER TO DEFENDANT'S REQUEST FOR ADMISSIONS OF FACT AND GENUINENESS OF DOCUMENTS.

Pursuant to Defendant's request under Rule 36 A of the Rules of Civil Procedure for admissions of fact and genuineness of documents, Plaintiff answers as follows:

1. That each of the documents numbered 1 to 28, inclusive, under subdivision I of Plaintiff's request, save item 25 "Carbon Report and Analysis Dubbs Cracking Process Universal Oil Products Company. Chicago" R-8 5-10-24 is a genuine document issued by Plaintiff. As to said item 25, Plaintiff has been unable to find any original corresponding to said document, nor has Defendant exhibited to Plaintiff the original of said document, and Plaintiff is, therefore, unable at this time to concede the genuineness of said documents, or that it was issued by Plaintiff.

4281 2. Each of the photostats or typewritten copies identified in subdivision II of Defendant's request is a true copy of a genuine document which was issued by Plaintiff or its predecessors.

3. Each document listed under subdivisions I and II of Plaintiff's request, save item 25 of subdivision I thereof, was distributed by Plaintiff, or its predecessors, to its field men and/or operators and/or other employees or representatives and/or to its licensees.

4. Prior to the filing of the Complaint herein, Plaintiff did cause to be circulated among members of the public, copies of the publication entitled "Modern Methods in Petroleum Refining and Natural Gasoline Manufacture, Reprints of Articles Appearing in The Oil and Gas Journal, Tulsa, Oklahoma" and bearing the legend "Compliments of Universal Oil Products Company Owners of the Dubbs Process 310 South Michigan Avenue, Chicago, Illinois", said publication being identified in subdivision IV of Defendant's request.

The foregoing admissions of fact and genuineness of documents is subject to all pertinent objections as to admissibility which Plaintiff may interpose at the trial.

Charles M. Thomas,
Attorney for Plaintiff.

March 20, 1940.

4282 ABSTRACT OF DX 590.

Booklet by Universal Oil Products

"Another Year 1924-25 Dubbs Cracking Process"

"The Dubbs Process is designed to minimize the hazard incident to subjecting inflammable liquids to high temperature by keeping the source of heat away from the main body of oil to be cracked. The volume of oil in the entire Dubbs Cracking Process at any one time is comparatively small. Heating the moving oil in tubes not only increases safety but minimizes the formation of carbon in the heating zone where it does the most harm. (October 1924)

"When you crack Gas Oil, the more Gas Oil you have left from the products of the operation, once through, the greater the burden of the operating cost on that portion of the Gas Oil which is actually converted into gasoline.

"When you crack Gas Oil and degrade a good portion into Fuel Oil you do so at a loss.

"Either way you face the old skimming plant problem of the gasoline carrying the whole burden and when the gasoline produced is only 30% of the original charge it is not enough to carry the load.

"When you crack Fuel Oil and produce only gasoline, stove distillate and Gas Oil, all of greater value that the Fuel Oil charging stock, you have a profit on all products made.

"This is only possible by the non-residuum runs using Fuel Oil as charging stock and non-residuum runs are only possible with the Dubbs Process.

"You can also make non-residuum runs with the Dubbs Process using Gas Oil as charging stock if you wish, but the lower the cost of the charging stock the larger your profit on the gasoline produced. (December 1924)

• • • • • •

"It matters not what charging stock is pumped to the Dubbs Cracking Process. With equal facility varied hydrocarbon oils are cracked into high yields of gasoline with large throughput per day per unit.

"The only difference to you is that the cheaper the charging stock the bigger will be your profits. (January 1925)

4283 • • • • • •

"The Dubbs Cracking Process can even make a good living for your refinery out of the waste or degraded products from any other process. Yes, from any other cracking process if you happen to have one.

"We will furnish the crutch to help you out.

"You can operate the Dubbs Process to produce no waste or degraded products—just gasoline and coke, no matter what the charging stock may be. (February 1925)

• • • • • •

"It's always bright and cheerful in a refinery using the Dubbs Cracking Process, for the profits lie in cracking whichever charging stock at the moment has a low market value.

"The Dubbs Process makes no distinction between cracking kerosene, gas oil, fuel oil, topped or heavy crudes, or refinery slops.

"All charging stocks look alike to the Dubbs Cracking Process but the cheapest stock will look best to you. (February 1925)

• • • • • •

"If you were prevented from employing men in your

refinery under 32 and over 36 years of age, you would feel seriously handicapped.

"You are handicapped even more seriously with a cracking process that is limited to cracking 32 to 36 gravity distillate.

"The Dubbs Cracking Process will crack anything that is liquid hydrocarbon and that can be brought to the process from a 9.7 Baume gravity to and including a kerosene distillate and with larger yields in every range and in every cut than is possible in one throughput by any other known method.

"We mention 9.7 Baume because the Dubbs Process has successfully cracked such charging stock and produced therefrom more than 21% of gasoline in one throughput. The lighter ranges now produce from 40% to 60% of gasoline on each throughput. (May 1925)

• • • • •

4284 "We have said so much about the advantage of cracking fuel oil (topped crude) run raw and direct to the Dubbs Cracking Process without pre-distillation or pre-treatment that we fear some refiners may have an impression that the Dubbs Process is limited to cracking fuel oil or that it is its main or only advantage.

"To correct any such impressions, we state here and now that no process will crack gas oil as efficiently, as cheaply, with such yields of good gasoline in each throughput and at as low cost per gallon, as the Dubbs Cracking Process.

"And its merits would be outstanding if we limited its use only to cracking gas oil. (August 1925)."

4285 ABSTRACT OF DX 591

Booklet by Universal Oil Products

"Dubbs Cracking Process Year Book 1925-26"

• • • • •

Cracked Gasoline Knoxless-Pullsmore.

25 "No longer need the refiner market his cracked gasoline under the guise of straight run gasoline. For carefully checked road performances made in various cities with various gasolines are daily proving the superior anti-knock properties of cracked gasoline.

"This cracked gasoline, because it knocks less and pulls more, is a premium quality gasoline and is worthy a premium price over straight run."

• • • • •

40 "Consider the owner of a Dubbs Cracking unit. He worries not about the cost of fuel oil. Neither does he have to confine his charging stock to the lighter (and more expensive) fractions of the crude.

"He uses gas oil, fuel oil or the heaviest Smackover crude run raw and direct to the Process. And in every case he obtains a greater gasoline yield than he could with any other process.

41 "Even with gas oil for charging stock not one, but every product of a single throughput in the Dubbs Cracking Process is of equal or greater value than the original charging stock.

"No need to make fuel oil from good gas oil when using the Dubbs Process.

• • • • •

42 "The increasing use of distillate for house-heating oil burners and the increasing price of kerosene are rapidly eliminating the use of gas oil and light distillate for cracking purposes.

"The refiner who installs only a gas oil cracking plant may soon find his gasoline costing more than he can get for it, while his neighbor is selling his gasoline at a good profit because he makes it direct
43 from fuel oil, topped crude or low grade crude with his Dubbs Cracking plant.

"But if he wants to crack gas oil, his Dubbs Process does it cheaper and better than any other."

45 4286 "The refiner who installs a cracking process limited to light charging stocks is always in the frying pan or in the fire.

"To buy his charging stock is proving to be a costly procedure due to the increasing demand for these fractions, and to install additional equipment in order to manufacture it increases his investment and his overhead and decreases his profit.

"The refiner who installs the Dubbs Process charges the cheapest oil available to his cracking plant and obtains the highest yield and the greatest profit.

• • • • •

50 "A cracking process limited to select light charging stock is like a car with only a high speed—a hard

climb either makes it stop or back down, and backing down costs money.

"The Dubbs Cracking Process has three speeds, in that it can crack fuel oil, gas oil, or crude direct, and regardless of the oil it will produce the highest yield and the greatest profit.

51 "When the margin is fairly wide between the refinery cost of gas oil and the sale price of gasoline the refiner using an ordinary cracking process simply misses out on part of his rightful profit.

"But when the margin narrows he loses both his profit and his working capital.

"The Dubbs Process, with its exclusive ability to crack even the heaviest crudes, insures its users an ample operating margin regardless of price fluctuations. And if you want it to, this same process will crack gas oil more profitably and completely than any other process."

• • • • •

53 "How would you operate a refinery if located on a railroad that could only deliver gas oil?

"That will very likely be the situation of the refiner who can only deliver gas oil to his cracking process.

53 4287 "No such predicament awaits the refiner with the Dubbs Cracking Process.

"Every type of oil, every fraction of the crude is 'grist' that comes to the Dubbs Cracking 'mill' ".

• • • • •

62 "How long could you continue in business if all your tank cars were suitable for carrying only gas oil to and from your refinery.

"Why then a 'Gas Oil Limited' cracking process when the Dubbs Process will take gas oil, fuel oil, topped crude or low grade crude without discrimination, and deliver more good Knoxless-Pullsmore gasoline in each trip at lower cost per gallon, than any other method, whether cracking or distilling.

"And the Dubbs Process will require less of your good money for the plant investment per barrel of gasoline produced."

66 4288 "The Patent Situation
and
The Dubbs Cracking Process"

"It is a matter of pride with us that the general principles which constitute the Dubbs Cracking Process today, are the same as in the beginning of its career. The elements are:

(a) A pipe still
(b) An enlarged expansion chamber
(c) A dephlegmator
(d) A condenser
(e) Operation under self-generated pressure, as defined in patent No. 1123502.

"Under later patents, we claim the exclusive rights for the Dubbs Process:

"(1) The return of the reflux condensate to the system for further treatment, as defined in the claims of issued patent No. 1392629.

"(2) The return of the reflux condensate to the system for further treatment by forced (mechanical) means (pump), as defined in the claims of issued patent No. 1525281.

"(3) A controlled dephlegmation of the vapors, as defined in the claims of issued patent 1484445.

"(4) The 'overhead feed' of the charging stock, as defined in the claims of issued patent No. 1488325.

"(5) Operation at differential pressures in the system, as defined in the claims of issued patent No. 1534927.

"(6) The passage of independently heated streams of charging oil and reflux condensate to a common vaporizing zone as defined in claims of issued patent No. 1537593.

"(7) The 'split feed' of the charging stock, part overhead, part direct to the heating elements, as defined in the claims of issued patent No. 1522425.

"(8) The passing of the heated oil, through a series of heated vaporizing chambers, as defined in the claims of issued patent No. 1440772.

"(9) Passing the oil in a closed cycle through the heated element and expansion chamber with recracking of reflux condensate and withdrawal of heavy

residuum, as defined in the claims of issued patents No. 1534927 and No. 1281884.

67 4289 "(10) Bubbling the vapors through oil pools in the dephlegmator with heat interchange with the charging stock, as defined in claims of issued patents No. 1488325, No. 1525281 and No. 1546634.

"(11) A coke-like carbonaceous fuel produced by cracking, as defined in the claims of issued patent No. 1517830.

"There are numerous other patented features embodied in the process and covering the apparatus. We have more than 700 pending applications for patents.

* * * * *

"You never find an unsuccessful device or process infringed. The greater its success, the greater the temptation.

'Pirating is an old art—it started on the high seas.

'Infringement is its wicked partner and successor on land.'

"There are two types of infringers

(a) Those who claim they didn't know.

(b) Those who do know, but deliberately appropriate the rights of others.

"By means of this announcement, we want to eliminate all those who belong to class "a"—Everyone shall know.

"We shall then by orderly legal proceedings endeavor to establish our rights and protect our licensees against infringement of our patents."

4290 "Supplemental Announcement"

"The Patent Situation and The Dubbs Cracking Process."

"Since the preparation of the announcement in a recent issue of this Journal, the following additional patents have been issued to us:

"(1) The 'No-Residuum' type of operation, producing only overhead distillate (gasoline and gas oil) and coke, as defined in the claims of issued patent No. 1551090.

"(2) (a) The cooling of vapors in the dephlegmator, through indirect heat interchange with the incoming charging stock,

"(b) Bubbling the vapors through pools of accumulated condensate unmixed with the incoming charging stock passing in indirect heat transfer relationship to the vapors.

"a" and "b" as defined in the claims of issued patent No. 1550568.

"(3) The forced (pump) return of the reflux condensate combined with a portion of the charging stock fed 'overhead', both commingling with the remaining portion of the charging stock fed direct to the heating element, as defined in the claims of issued patent No. 1550607.

"(4) (a) Diverting the stream of heated oil, during the operation of the Process, from one reaction chamber to an alternate reaction chamber.

(b) Preconditioning the alternate chamber before diverting the stream of heated oil.

'a' and 'b' as defined in the claims of issued patent No. 1549352.

"(5) A flexible element (cable or chain) for disrupting the coke in the reaction chamber at the end of the run, as defined in the claims of issued patent No. 1548004.

"(6) Process for cracking emulsified oil by subjecting the same to surface heating, as defined in the claims of issued patent No. 1550892.

"This Is For The Further Enlightment Of Those Who Might Otherwise Claim, 'They Didn't Know'."

4291 "In August and November last, we made announcement of our patent position in various trade journals under the above title.

"We quote from that first announcement the following: 'We shall then by orderly legal proceedings endeavor to establish our rights and protect our licensees against infringement of our patents."

"In confirmation of the above, we have now instituted suits against the following:

"(1) The Texas Company—for the use and operation of the so-called 'Holmes-Manley Process,' alleging infringement of 12 of our patents under 63 claims thereof.

"(2) The Standard Oil Company of Indiana—for the use and operation of the so-called 'Holmes-Manley Process,' alleging infringement of 12 of our patents

under 63 claims thereof. (We have suit pending against this company alleging infringement by the so-called 'Burton Process.')"

• • • • • •

"(3) The Gasoline Produets Company and the M. W. Kellogg Company—for the promotion and sale of the so-called 'Cross Process,' alleging infringement of 12 of our patents under 55 claims thereof.

"(4) The Gulf Refining Company—for the use and operation of its cracking process, alleging infringement of 11 of our patents under 55 claims thereof.

In addition to the foregoing, we instituted suit in September and October, 1925, against the following:

"(5) The Skelly Oil Company—for the use and operation of the so-called 'Jenkins Process,' alleging infringement of 5 of our patents under 17 claims thereof.

"(6) The Empire Refineries Inc.—for the use and operation of the so-called 'Brandt-Doherty Process', alleging infringement of 7 of our patents under 35 claims thereof."

4292 DX 592.

Booklet by Universal Oil Products

"Progress of 1 year with the Dubbs Cracking Process."

• • • • • •

"It doesn't matter whether the charging stock is Topped Oil, with or without the Kerosene, or whether it is Gas Oil or Residue from California crude or from Texas, from Oklahoma or Louisiana, from Arkansas or Kentucky, from Pennsylvania or West Virginia, from Montana or Wyoming—the results are all about the same when cracked by the Dubbs process.

"Mid-Continent 24-25 gravity Fuel Oils run direct to and only once through the Dubbs Cracking Process are regularly yielding in excess of 40 per cent of good new Navy-IBP-EP gasoline and without the expense, the equipment and the loss of any pre-treatment or pre-distillation to prepare the stock for cracking.

"It just eats it raw." (August, 1923)

• • • • • •

"The refiner who is not equipped to crack every type of oil, whether fuel, topped oil, gas oil or low grade crude,

direct and without pre-distillation or pre-treatment, has an awful handicap against those who have the Dubbs Cracking Process.

"And the refiner who does not crack his oil is likely to crack his Company if he does not completely break it." (August, 1923)

• • • • • •

"The Dubbs Cracking Process is based on and protected by more than 1200 issued patents and pending patent applications.

"This is merely an indication of the research and creative work done by our Staff in the last decade.

"We guarantee our licensees unqualified protection under our patents in the use of the Dubbs Process, against the world." (January, 1924)

• • • • •

"The ability of the Dubbs Cracking Process to operate as easily on topped crude or fuel oil as on gas oil, enables the refiner, who now runs his crude to asphalt or coke, to either shut down a large part of his still capacity or greatly increase his crude runs without extra cost of installation or operation.

4293 "Give us an outline of your present refinery operations and we will submit a plan applied to your specific case that will open your eyes." (April, 1924).

• • • • •

"The Dubbs Cracking Process Will:

"(1) Crack Fuel Oil or Topped Crude, and Oh, Boy! what a picnic for you when you figure the cost. Converting Fuel Oil into Gas Oil isn't cracking Fuel Oil, it's cracking Gas Oil and your cost sheets will show the difference.

"(2) It will crack Gas Oil and yield 50% gasoline in each throughput and, of course, at less cost for each gallon of gasoline produced than can be done by any other known method.

"(3) It will crack Kerosene Distillate with greater yield and at less cost per barrel in one throughput than any other known method, but who wants to crack Kerosene Distillate?

"(4) It will crack any hydrocarbon in liquid form or that can be made liquid so as to get it into the process." (September, 1924)

• • • • •

"Every drop of residuum produced as a product of the Dubbs Cracking Process is usable fuel of higher calorific value than any fuel you now use in the operation of your refinery.

"But why make any residuum (fuel oil) when cracking gas oil. You can turn it all into gasoline and dry coke if you wish, with the Dubbs Cracking Process, but with none other." (September, 1924).

4294 DX 599.

Application A.

SPECIFICATION.

To All Whom It May Concern:

Be It Known that, We, Ralph C. Holmes, Frederick T. Manley, and Otto Behimer, citizens of the United States, residing, respectively, at New York, in the County of New York,
and State of New York, Houston, in the County of Harris, and State of Texas, Port Arthur, in the County of Jefferson,
and State of Texas, have invented certain new and useful improvements in

Processes And Apparatus For Making Gasoline

of which the following is a specification:

This invention relates to methods and apparatus for making condensable light oils, such as gasoline. More particularly it relates to certain novel improvements in the cracking of hydrocarbons whereby higher boiling hydrocarbons are decomposed into those of lower boiling point.

In prior methods of cracking hydrocarbon oils, considerable difficulty has been experienced on account of carbon formations, which occur on the sides of tubes and stills exposed to the heat required to carry on the cracking operation. It is a novel feature of the herein disclosed process, that the cracking operation occurs in a vessel to which no external heat is applied, except at times that necessary to overcome heat radiation, the oil

Note: All portions in italics were inserted in long hand.

prior to its introduction to such vessel having been subjected to a high degree of heat and the excess heat of the oil itself being used to effect its own decomposition. As a consequence we avoid carbon formations of the destructive
character which have proved such an impediment to prior systems. The removal of the cracking operation from the heating zone also reduces the danger from fires such as frequently occur where cracking is carried on in highly heated stills and coils exposed to direct heat.

4295 Our process embodies a novel circulatory system in which a ring of oil is constantly maintained under varying liquid and vapor phases. The oil to be treated on entering this ring is subjected to a high degree of heat, but the time element is so controlled that there is comparatively little decomposition while it is exposed to this external heat, the oil being rapidly removed from the heating zone and conducted to the cracking zone, where without being subjected to additional heat, it undergoes a molecular decomposition whereby carbon and light products are formed. The bulk of the carbon is removed from the ring by withdrawing
from the cracking zone portions of the residual oil. The light products continue the cycle, leaving the cracking zone
in the form of vapor and gas. These vapors and gases are then subjected to a reduction in temperature, whereby the heavier constituents thereof such as kerosene, are condensed.
The condensate is combined with the charge of oil entering the heating zone thus completing the cycle. The constituents
of the desired volatility are removed from the ring and condensed. The outlets from the ring are so controlled that the entire system is maintained under a pressure sufficient to insure the desired molecular transformation.

Our process is to be distinguished from those of the prior art, in which a ring of liquid residuum is kept in circulation. When such oil is kept in circulation, considerable quantities of carbon are formed, owing to the readiness with which this type of oil carbonizes when exposed

to high temperatures, the carbon forming in fine particles in the oil, and where-ever it comes in contact with heated metal surfaces, it attaches itself thereto and builds up deposits, which often cause the choking of tubes and coils. It also crystalizes the metal surfaces, thereby decreasing the tensile strength of the metal and causing the bulging and breaking of such surfaces. Any residual oil resulting from the cracking operation will necessarily contain a

—2—

4296 considerable amount of carbon held in suspension in the oil

and to circulate such a residue through heated tubes is to continually pass into such tubes a large amount of free carbon. In our system we do not circulate a residuum, but instead keep the residual oil removed from the application of external heat and withdraw the heavier portions thereof (Which contain the bulk of the carbon) from the cycle at the cracking zone, and continue the cycle by means of the vap-

or generated, which contains the condensable product desired and also certain heavier contituents which are used to complete the cycle. By removing the heavier residuum from the cycle, we keep the ring free from this source of carbon formation, and since we conduct the actual cracking in a vessel unexposed to external heat, we are thus able to effectively remove the carbon formed.

In cracking oil for gasoline, there is generally formed a considerable quantity of vapors heavier than gasoline, which may be generally designated by the term, kerosene. We employ these heavier vapors as a solvent for the lighter vapors; they assist in maintaining a current of vapor by which the gasoline is removed from the cracking zone to a separator where the kerosene vapors are reduced in temperature sufficiently to separate them from the vapors of the volatility desired for gasoline. The kerosene condensate preferably at a temperature not materially below its boiling point, is injected into the oil charge entering the heating tubes, whereby a foamy mixture is produced, which

accelerates the circulation in the heating tubes thereby preventing the oil from being overheated, and also keeping the tubes swept free from any carbon formations. These kerosene constituents are an excellent mechanical conductor

of heat, and there is thus produced a heat cycle which maintains the proper temperature in the cracking zone. By maintaining these bodies in constant circulation, the kero-

—3—

4297 sene constituents, which under existing methods have been found so difficult to decompose into lighter products, are, in our system, ultimately reduced to gasoline.

We have devised certain novel apparatus which is adapted for carrying out our process, and illustrate the preferred form thereof in the drawing which represents a diagrammatic, vertical plan view of said apparatus. It is understood that other apparatus besides that illustrated may be used in carrying out our process.

The coil 1 is located in the furnace 2, having the burner 3 and the stack 4. A checkered brick baffle 5 having the openings 6 may serve to distribute the heat evenly over the coil. The charging line 7, having the jet 7a, extends to the pump 8, which is connected to a suitable source of oil supply not shown. The pipe 9, having the valve 10, extends from the heating coil 1 to the cracking drum 11, within which it terminates in the distributor 9a. The cracking drum is preferably heavily insulated against heat radiation and is equipped with the valved draw-off 12, and the vapor outlet 13. It may also have an oil gauge 14. The vapor outlet 13 extends to the separator 15, having the vapor outlet 16, and the condensate outlet 17. The vapor line 16 terminates in the water-cooled condenser coil 18, having the outlet 19 equipped with the valve 20. If desired the valve 20 may be placed in the vapor line 16. The outlet 19 terminates in the collecting drum 21, having the valved gas-outlet 22 and the valved condensate outlet 23. The condensate line 17, which is preferably insulated, is equipped with a valve 17a and is connected to the charging line 7 at the jet 7a.

In conducting the process with the apparatus illustrated, the oil to be treated is forced through the charging line 7 under considerable pressure, and is rapidly circulated through the heating coil 1, where it is heated to

—4—

4298 the desired temperature. The temperature is generally

from 50 to 100 degrees higher than the temperatures at which it is desired to conduct the cracking operation, and ordinarily varies from 800 to 900° F. The oil on being circulated through the coil acquires considerable heat, but on account of the rapidity of its flow, decomposition is only in the insipient stages, the oil being withdrawn into the outlet 9 as cracking develops and is passed into the cracking drum 11 where a constant body of oil is maintained at a cracking temperature. The distributor 9-a serves to discharge the oil into the cracking drum in a wide stream; thus spreading out the vapors and gases in the stream whereby their heat is diffused throughout the body of oil in the drum. This heat diffusion is materially aided by using a distributor with serrated edges. The rapid circulation of the oil having been suddenly suspended, and the oil having entered a chamber of ample volume, the excess heat of the oil operates to maintain the body of oil at the desired cracking temperature and molecular decomposition is carried on vigorously, the higher boiling hydrocarbons continually breaking up into hydrocarbons of lower boiling point. The vapors and gas generated gather in the upper part of the cracking drum and pass out through the vapor outlet 13 to the separator 15, where there is effected a separation of hydrocarbons of desired volatility from those of less volatility than desired. The hydrocarbons of the desired volatility pass out through the vapor line 16, by which they are conducted to the condenser 18, where they are condensed and the condensate is either intermittently or continuously allowed to run into the collecting drum 21.

The temperature in the air condenser 15 is such that the less volatile hydrocarbons are condensed and dropped into the conduit 17, by which they are conducted to the jet

—5—

4299 in the charging line. The separator is preferably somewhat elevated so as to give a considerable head of liquid in the pipe 17, which preferably contains a U bend as illustrated in order to form a liquid seal therein. This head of liquid, together with the high pressure at which the oil in the charging line passes the jet, this pressure being ordinarily from 50 to 100 pounds higher than the pressure in the drum, insures that the condensate shall

be constantly drawn into the charging line and forced into the coil 1. The introduction of this condensate into the charging line increases the volume of oil in the heating coil thereby accelerating the flow therein so that the coil is swept free from any carbon formations. This condensate consists in a type of hydrocarbons which when decomposed does not yield any great amount of carbon so that the oil charge is constantly being diluted with oil capable of being decomposed into lighter products without the production of large amounts of carbon. This condensate
reaches the jet in a heated condition, preferably at a temperature not materially below its boiling point, so as to heat the charge of oil entering the heating coil. The heat cycle formed by the kerosene constituents enables the maintenance of the proper cracking temperatures in the cracking drum.
By injecting this condensate into the heating coil we increase
the volume of oil flowing therein without increasing the total
amount of oil in the system at any given time.

A considerable pressure is maintained throughout the system, which pressure is regulated by means of the valve 20 or the valve on the gas outlet 22. The pressure used varies with the character of the oil operated on and on
the character of the product desired. Ordinarily the decomposition in the cracking drum is carried on under a pressure of from 100 to 400 Pounds.

—6—

4300 The oil to be decomposed is constantly forced into the heating coil thereby causing a steady stream of heated
oil to enter the cracking chamber. The residuum is withdrawn preferably at such a rate that there is maintained a constant body of oil in the cracking zone.

It is desirable to equip the apparatus with the valves 10 and 17a so that in case there is a break in the heating coil the effect of any fire resulting may be localized by closing said valves whereby the bulk of oil in the system will be retained in the cracking drum 11.

It is understood that in the normal operation of the process these valves are open.

It is sometimes necessary to apply an auxiliary heat to the cracking drum. A convenient method of providing this auxiliary heat is to insulate only the upper part of the drum and enclose the lower portion in a furnace. In the early stages of a run, since there is no danger of overheating a carbon-free surface, the drum may be heated freely until the necessary heat cycle has been generated and decomposition has begun. But when decomposition begins, with a consequent deposition of carbon, the fire must be reduced as otherwise the carbon would accumulate on the hot surfaces and build up tenacious formations thereon, thus preventing the effectual removal of the carbon and asphaltic bodies. As the run continues only a moderate heat is applied, sufficient only to offset the loss of heat due to radiation. If desired the drum may be heated by means of waste heat.

The product obtained by the herein disclosed process is, for a cracked product, a remarkably sweet, saturated one. Judging by all the usual tests it appears to contain ordinarily from 10 to 15% of unsaturated

—7—

4301 bodies. We attribute this low percentage of unsaturated compounds to the fact that the bulk of the decomposition of the vapors is carried on while they are in solution and unexposed to heated metal surfaces subjected to direct heat.

It is understood that we use the terms "Gasoline" and "Kerosene" in this application in a somewhat broader sense than they are ordinarily used in the art. By the term "Gasoline", as used herein, we mean the volatile product desired which under the temperatures and pressures used is a vapor in the separator 15 and is condensable in the cooling coil 18. We designate by the term "kerosene" those constituents which under the temperatures and pressures used enter the vapor line 13 in the form of vapor and are condensable in the separator 15. It is to be noted that the character of the constituents which we have found convenient herein to refer to as kerosene may sometimes comprise such products as are commonly know in the art as

spirits or turpentine substitute. *By injecting this condensate into the heating coil we increase the volume of oil flowing therein without increasing the total amount of oil in the system at any one time.*

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:—

1. The process of converting a higher-boiling hydrocarbon oil into lower-boiling hydrocarbons which consists in rapidly forcing said higher boiling oil through a heated area of limited extent whereby the oil absorbs considerable heat and then passing the heated oil into a chamber under pressure and allowing the heat in the oil to effect its decomposition.

2. The process of converting hydrocarbons oil by continuously injecting same into a hydrocarbon ring, maintained under pressure, which consists in circulating the oil through a heated coil whereby it acquires considerable heat but is removed therefrom before any material decom-

4302 position sets in, passing said oil into a body of oil maintained at a cracking temperature by the continual entrance therein of the stream of oil from the heated coil, removing from the cracking zone the residuum and vapors formed, separating the less volatile constituents of the latter and intermingling them with the stream of oil entering the heated coil, withdrawing from the ring and condensing the gasoline formed.

3. In the cracking of hydrocarbon oil, the step of removing the oil from the heating zone and allowing the heat contained in the oil to effect its decomposition.

4. In a system of converting hydrocarbons in which a body of oil is maintained under a pressure and temperature sufficient for cracking, the method of maintaining a kerosene heat cycle which consists in removing from said body of oil the generated vapors, separating the kerosene therefrom, mingling said kerosene with a stream of oil passing through a heated area and discharging the heated mixture into the body of decomposing oil whereby said body of oil is maintained at a cracking temperature.

5. The method of cracking hydrocarbons in which a body of oil is constantly maintained under pressure and at

a cracking temperature, the necessary heat for decomposition being supplied thereto by a stream of heated oil entering said body of oil.

6. The continuous method of converting hydrocarbons which consists in forcing hydrocarbons oil under pressure into a heated coil and regulating the flow therein so that it absorbs considerable heat, removing said oil from the coil before any material decomposition sets in and conducting it to a vessel maintained under pressure and unsubjected to external heat where cracking is carried on by means of the heat contained in the oil, removing from

—9—

4303 the cracking zone the residuum and vapors formed, separating the less volatile constituents of the latter and injecting them into the oil entering the heating coil.

7. The process of converting hydrocarbon oil which consists in continuously forcing said oil through a *heated* coil at a rate of flow sufficient to prevent deposition of any material amount of carbon and heating it to *at* a temperature varying from 700° to 900° F., continuously removing said oil from the coil before extensive cracking takes place and introducing it into a body of oil *while in its heated condition, maintaining* whereby said body of oil is maintained at a temperature sufficient for decomposition without the application of *other* external heat thereto, removing the residuum and vapors formed, separating the heavier of the vapors *from the others* and continuously injecting them into the heating coil, while maintaining a pressure of upward of 100 pounds throughout the system.

8. In the cracking of hydrocarbon oils, the step of removing carbon, which comprises carrying on the cracking operation in a vessel unsubjected to external heat (the necessary heat for decomposition being supplied thereto by means of a stream of heated oil entering therein), whereby the carbon and asphaltic bodies accumulate in the bottom of the vessel from where they are withdrawn.

9. The process of converting hydrocarbon oil which

comprises circulating said oil through a heated coil until the oil acquires a temperature varying from 700° to 900° F, continuously removing said oil from the coil and introducing
it into a body of oil whereby said body of oil is maintained at a temperature not substantially more than 50 to 100 degrees lower than the temperature of the stream in the coil thereby subjecting said body of oil to decomposition, removing from said body of oil the residual bodies and

—10—

4304 vapors formed, separating out the heavier of said vapors
and continuously injecting them into the heating coil, while maintaining a pressure of upwards of 100 pounds throughout the system.

10. The process of converting hydrocarbon oil which consists in forcing said oil through a coil and drum while applying heat to said coil and drum and allowing the vapors generated to develop pressure until decomposition of the hydrocarbons begins, then reducing the heat applied to the drum while securing it against substantial loss of heat through radiation and supplying the necessary heat for
decomposition by means of the stream of oil entering from the coil, the stream entering from the coil being continuously commingled with a hot condensate separated out from the generated vapors.

11. In apparatus for converting hydrocarbons, a charging line, a heating coil connected to a cracking drum, vapor and residuum outlets therefrom, a separator at the termination of the vapor line, a condensate pipe leading from the separator to the charging line.

12. In an apparatus for converting hydrocarbons, a heating coil, means for admitting oil thereto, an outlet from the heating coil terminating in a distributor located within a cracking drum, vapor and residuum outlets from said
cracking drum, a separator connected to the vapor outlet, and a vapor outlet terminating in a condenser.

13. In apparatus for cracking hydrocarbon oils, a drum substantially secured against heat radiation and heated by means of a conductor in communication with a heated coil and adapted to eject heated oil into the drum, means for removing the vapors from the drum and means

whereby the heavier thereof are condensed and injected in a heated state into the coil.

14. In apparatus for cracking hydrocarbon oils, a

—11—

heating coil connected to a cracking drum by means of a valved conduit, vapor and residuum outlets from the drum, a separator connected to the vapor outlet, means whereby condensate from the separator is injected into the heating coil, and means whereby vapors from the separator are removed therefrom and condensed.

15. In apparatus for cracking hydrocarbons, a coil subjected to furnace heat and communicating with a cracking drum, auxiliary means for heating the drum, means for securing the drum against loss of heat from radiation, vapor and residuum outlets from the drum, a separator connected to the vapor outlet and having a condensate conduit connected to the coil, means for withdrawing vapors from the separator and condensing same, means for regulating pressure in the apparatus.

16. In apparatus for cracking hydrocarbons, a heating coil communicating with a cracking drum, means for withdrawing carbon and asphaltic bodies from the drum, a vapor line connecting the drum with a separator having vapor and condensate outlets, means in connection with the condensate outlet for injecting condensate into the heating coil, means for removing vapors from the separator and condensing them and collecting the condensate, means for regulating pressure in the apparatus.

17. In the cracking of hydrocarbon oil, the step of removing the oil from the heating zone and allowing the heat contained in the oil to effect its decomposition in a chamber unsubjected to external heat except such as may be necessary to prevent undue heat radiation.

DX 604.

4306 (Stamp) K. G. Mackenzie 3:10 • Received • May 6 1918.

May 4th, 1918.

Filed Aug. 9-1940. Hoyt King, Clerk.
Holmes and Manley Applications.

Messrs. Foster, Freeman, Watson & Coit,
Washington, D. C.

Gentlemen:—

Mr. Mackenzie has informed me of the applications which he left with you on May 1st. We will, of course, wish you to file and prosecute these applications.

Very truly yours,
(Signed) James L. Nesbitt.

JLN-LSC.
RCH-FTM-KGM.

4307 DX 605.

(Letterhead of Foster, Freeman, Watson & Coit,
Washington, D. C.)

May 6, 1918.

Mr. James L. Nesbitt,
17 Battery Place,
New York, N. Y.

Holmes & Manley applications.

Dear Sir:

I have your letter of the 4th inst. in reference to the applications left with me by Dr. McKenzie a few days ago. I have been tied up with other matters, but will take up this case within a few days and get the papers to you as soon as possible.

Yours very truly,
Foster, Freeman, Watson & Coit,
Per Coit.

3/W

4308 DX 621.

The Texas Company

Personal New York. November 12, 1918.

(Stamp) K. G. Mackenzie Received Nov 18 1918.
Coil and Drum Application

Mr. R. C. Holmes,
New York Office.

Dear Sir:

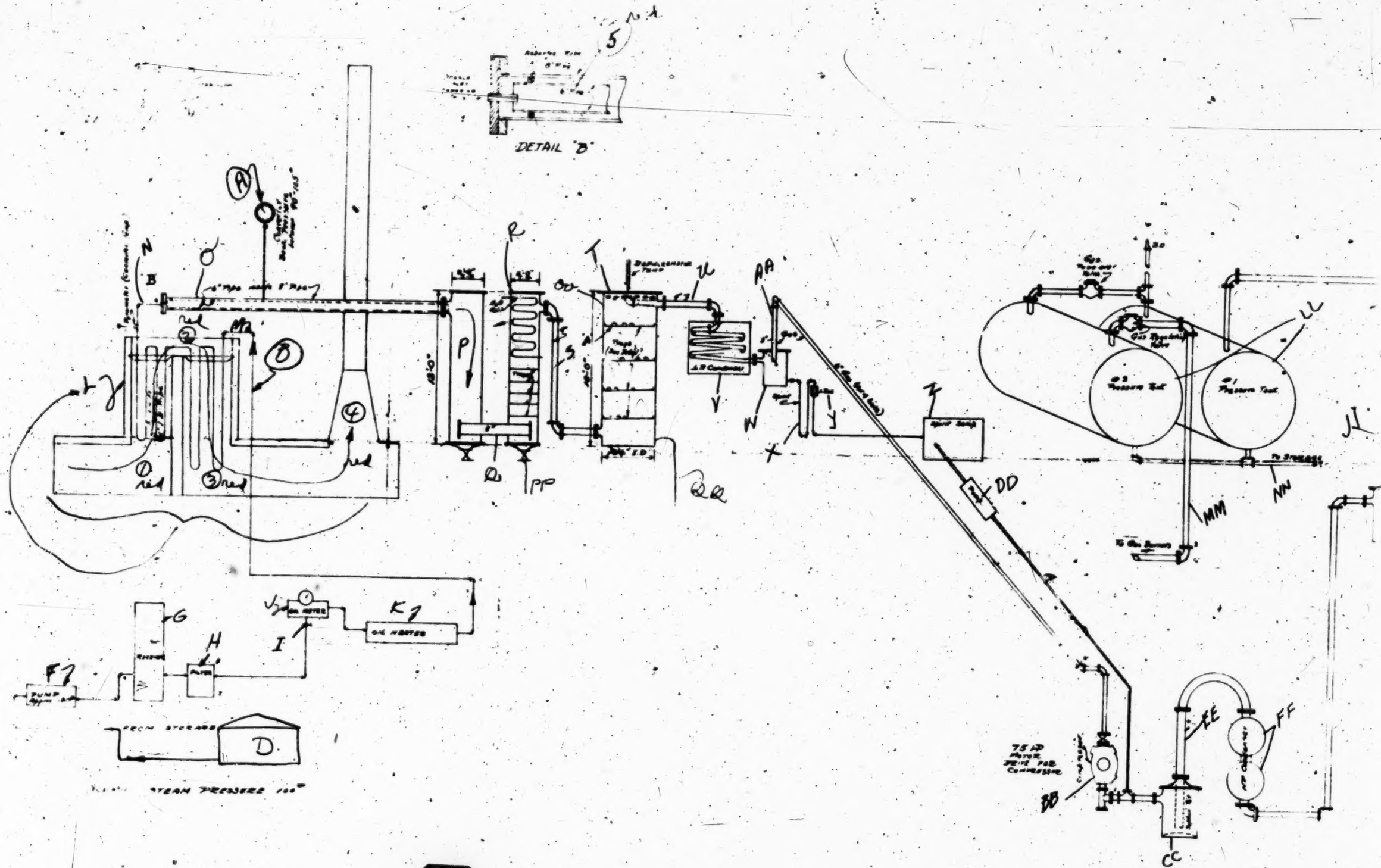
You have a copy of Behimer's letter to me under date of October 31. Behimer, of course, is not familiar with the application for the battery of stills which I believe will cover the points which he has raised.

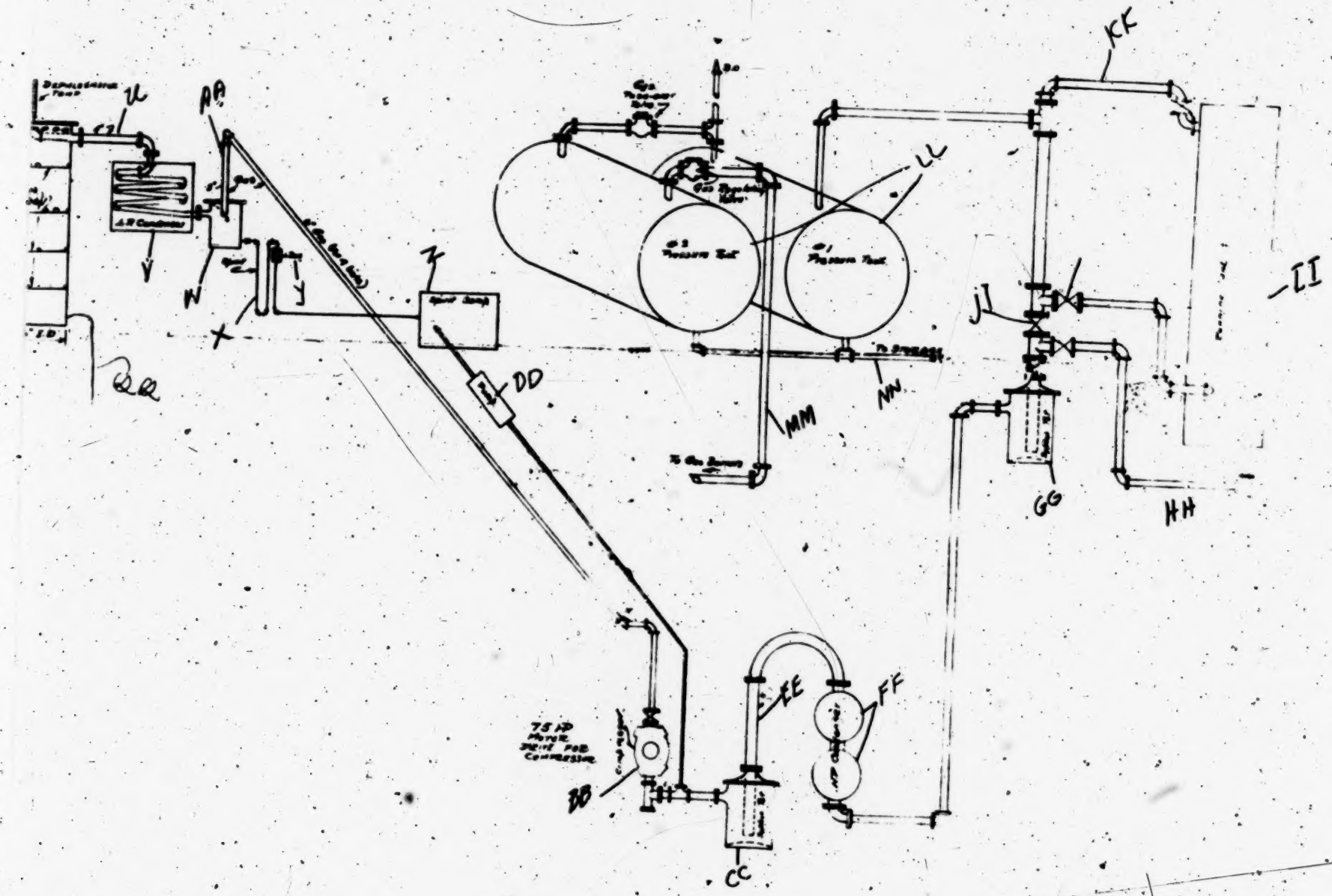
The application of Holmes, Manley and Behimer, for the coil and drum patents, has now been sworn to by the three applicants and is in condition for filing in the Patent Office. I will have the same filed unless you direct to the contrary.

Very truly yours,
K. G. Mackenzie.

KGM-RB
FTM (Personal)

(In margin) Mackenzie I have no suggestion in the matter RCH 11/16/18


DETAIL "B"
FROM STORAGE
D.
STEAM PRESSURE 100#
75 HP MOTOR DRIVE FOR COMPRESSOR
CC


U
AA
V
W
X
Y
Z
DD
MM
NN
KK
LL
JJ
II
GG
HH
EE
FF
BB
CC

4310 **DX 627.**

New York. April 12, 1917.

Hall Process

Runs 25 & 26, 32 & 33

Mr. R. C. Holmes,
Houston, Texas.

Dear Sir:

Since my report of February 28th our experiments with the Hall Process plant at Bayonne have been carried on as follows:

The plant was closed from February 6th to February 18th inclusive, to make certain repairs to the foundation under the convertors.

From February 19th to 26th we ran on light residue produced from running kerosene.

From Marsh 1st to 4th we ran on the same light residue, distilled before running to remove heavy carbon-forming ends.

From March 7th to 30th we ran for benzol toluol.

From April 2nd to 5th we ran on the residue obtained from cracking light residue, and on the heavy ends taken from the naphtha distillate produced in our kerosene runs.

From April 5th to date we have been running on Paraffin Gas Oil and will continue running on this oil and on the by-product oils formed in the operation.

The report on Benzol Toluol will be forwarded to you in a few days, pending the completion of our examination of the material made. I am reporting herewith results
4311 of our runs on light residue, distilled light residue, light residue from running residue, and heavy bottoms in naphtha distillate from kerosene. Copies of the converter logs are appended herewith.

Light Residue

The chronological record on the running of light residue is as follows:

Converter No. 1; February 19, 8:40 a. m./February 20, 6:45 p. m.

Everything running satisfactorily.

Converter No. 1; February 23, 8:30 a. m./10 a. m.; 11:55 a. m./2 p. m.

Runs stopped in both cases because of leaks developing in unions.

The same was also true of

Converter No. 3; February 23, 5:20 p. m./6:20 p. m.

Converter No. 3; February 23, 8:08 p. m./February 25, 9:50 p. m.

This run was stopped because of abnormally high pressure developing in the converter coils.

Converter No. 1; February 25, 6:25 p. m./February 26, 1:57 p. m.

The run was stopped at this point because inspection of the converter tubes of No. 1 Converter showed some of them to be almost closed with a hard carbon deposit.

Tables showing distillation on the light residue used, and the Naphtha distillate and light residue obtained by cracking, are appended herewith. I am also enclosing a blue print showing a form of nomenclature which we have developed in order to simplify the reporting of the various by-product oils produced in the operation. This nomenclature will be found in use in these distillations.

This excessive carbon formation occurred, as far as we could judge, at the point in the coils where the oil
4312 was completely vaporized, and might be termed carbon of vaporization rather than carbon of cracking. In other words, this residue will not distil completely without leaving a residue of carbon or coke. Such being the case, it was necessary to distil this residue and this was done, running approximately 90% off and leaving 10% bottoms which would be available for fuel oil but would be worked up into other products.

Distilled Residue

Run No. 26. The distilled residue was run March 1st to 4th inclusive. The yields obtained, and distillation on the residue used and naphtha distillate and light residue obtained, are appended herewith. At the end of this run a very light coat of carbon was noted in those tubes in the converter where vaporization must be assumed to have taken place. The yield of gasoline on the residue was not quite as high as that obtained on kerosene, but this is undoubtedly due to the fact that we had considerable time

to determine just the right temperature for kerosene and a longer run on this residue would have enabled us to likewise probably determine better working temperatures.

Distilled Residue "B"

Run 32

Residue "B" was obtained by distilling the light residue obtained in the cracking of the light residue from the kerosene run. About 90% was distilled off, leaving about 10% bottoms. Converter logs, yield sheets and distillations are appended herewith. The light residue obtained in this cracking operation, taken from the blueprint table, is designated as light residue "C."

4313 Heavy Ends From Naphtha Distillate
Run 33.

Naphtha distillate, obtained from cracking kerosene, was distilled and the heavy ends boiling above 374 were re-cracked, these heavy ends having been distilled in the course of the removal of the gasoline. This was run for 24 hours, from April 4, 10 a.m. to April 5, 10 a.m. The yield of gasoline was somewhat low, due, I believe, to the fact that we did not determine the best cracking conditions. Copies of converter logs, yields and distillations are appended herewith.

Valuable Products From Residues.

In order to determine whether or not valuable products might be obtained from some of the residues, the still bottoms, amounting to about 10% of the light residue, were re-distilled with bottom steam, with the following results:

RESIDUE "A" BOTTOMS

(100 gals. distilled)

Per Cent.	Gravity	Viscosity Universal at 100° F.	Flash	Fire
45-55	32.7	39.5"	253° F.	285° F.
55-60	31.9	39.5"	265	280
60-70	30.1	41.0	286	280
Residue	10.	88 @ 210°	330	360

We are re-distilling this residue for the purpose of investigating such oils of a lubricating nature as may be obtained thereby. I anticipate, however, that these oils will probably not be of value as lubricants, being very similar to the product produced in the Burton Process, for which Burton has been granted a United States product patent.

We made several tests on oils of this nature pro-
4314 nature produced in our pressure still and found that although oils with very low Beaume' gravity, and having some viscosity, were obtained they contained large percentages of unsaturated products and could almost be converted to a tar by the General Electric oxygen test.

Very truly yours,

(Signed) K. G. Mackenzie.

KGM-RB
ECL-WAT-JGD
Enc.

4315 DEFENDANT'S EXHIBIT 628.

Final Report
on
Hall Process

May 9, 1917.

4320 The Process As Carried Out At Bayonne.

Bearing in mind the principles of the Hall Process, as described to us, comparisons will now be made with the Process as installed and operated at Bayonne. Certain photographs were taken of the plant during and after construction which will be used to illustrate the description of the plant.

In Plate #1 we have the converter house under construction. The main part of the building contains the four converters, the brick foundations of which may be plainly seen; the leanto at the right comprises the pump room, at the nearer, and the control room at the further end.

Plate #2 shows the converter house with pump and control room at a later stage.

From Storage to Converter. The oil to be cracked is

drawn from storage tanks by means of pumps shown in Plate 3, a view of the converter pump house. These pumps deliver the oil at an average pressure of 180 to 200 lbs., first to the equalizing pressure tank at left center, and from there to the oil filter at extreme left. This filter contains a number of layers of Turkish toweling which effectively removes sediment, grit and dirt of all kinds which would clog the meter or valves.

From the filter the oil goes into the adjoining control room to the oil meters. In Plate 4 we have a view of the control board on which the oil meters are installed, the rate of flow being accurately controlled by the valves in front of each meter. Four valves will be noted immediately below, which are attached to steam lines so that steam may be almost instantaneously substituted for oil in the cracking system whenever the same is needed.

The lowest row of gauges on the board above show the pressure of the oil as it leaves the pump and as it enters the converter tubes. The upper gauges show pressure in the 8-inch line leading to the dephlegmator, which will be referred to below.

From the control room the oil passes through a preheater, which is shown in the Plate 5, there being a separate preheater for each converter. These preheaters are steam heated and raise the temperature of the oil somewhat. The oil goes then from the preheater to the

4321 Converters. In Plate 6 we have a view of the converter furnace in its first stage of construction. This is practically the same view that was seen at a distance in Plate #1. In Plates 7 and 8 we have views of the nearly finished converters, showing the masonry construction and a few of the iron grids already in place for holding the U-shaped cracking tubes. In Figure 9 we see the top of the converters as finished. The oil enters the converter coils, now installed in the furnaces, by means of the lines at the rear, set close to the floor. The oil passes gradually toward the front of the furnace, emerging through upright pipes leading into 8-inch pipes which are seen to be covered with asbestos rope. These 8-inch pipes, it should be stated, are in turn surrounded by galvanized iron jackets, since their temperature, especially in making aromatics, is brought to a bright red heat. At the point where the 1-inch pipe enters the 8-inch pipe the gases expand and the pressure drops practically to atmospheric.

Two pyrometer ends will be seen in each 1-inch tube, the upper end connecting with a recording pyrometer in the control room and the lower end, or couple, being part of the automatic furnace control system.

Automatic Furnace Control. In connection with the Hall Process we have tried out, with great success, an automatic electrical control for keeping the furnace at definite temperatures. This control was designed largely by Mr. Luis de Florez, with the co-operation of the Leeds & Northrup Company in Philadelphia.

The fire ends of the furnace during construction are seen in Plate #10, the upper floor around the converter tops, illustrated in Plate 9, being seen in the upper part of the photograph. Plate #11 shows the furnace ends completed with the automatic control.

This automatic control can be used only with gas but we have used it with considerable success on a mixture of gas and oil, the difficulty being, however, that it is almost impossible to keep a sufficiently constant flow of oil. Since, however, enough gas for heating purposes is always produced by the cracking, the use of fuel oil is required only on starting up the furnace at times when an excess supply of gas is not on hand.

4322 Having brought the furnaces, by means of the hand valves, to approximately the temperature desired, the dial on the control board in the control room, shown in Plate 12, is set at the required temperature and the valves are automatically opened or closed by an electrical contact, providing thus a most uniform temperature. The result has been that labor for furnace control has been reduced to a minimum and but very little attention of any kind is required.

The Dephlegmators. The 8-inch pipes, shown in Plate 9, lead from the converter house to the dephlegmators which are numbered A, B and C, there being a set of dephlegmators for each converter. The gases and vapors pass from the 8-inch tube into the top of dephlegmator A which is two feet in diameter and twelve feet in length and is empty. From the bottom of dephlegmator A they pass into the bottom of dephlegmator B, of the same dimensions. Dephlegmator B, however, contains several perforated plates and a water coil is placed in the top of the dephlegmator for cooling and condensing purposes.

From the top of dephlegmator B the uncondensed vapors and gases are led to the bottom of dephlegmator C, which has a diameter of three and one-half feet and height of ten feet. This dephlegmator contains a number of Heckmann plates for further condensing and fractionating purposes, and its function is to condense out all products boiling above the range of the gasoline desired. From the top of dephlegmator C vapors still uncondensed, and gases, lead to a water-cooled condenser.

Plate #13 shows the dephlegmator house in the first stage of construction. Plate #14, the C dephlegmator and condenser boxes installed.

At the right of the condenser box, in front of the iron building which is the pump house, will be seen a rectangular tank. The distillate from the condenser runs into this tank, from which it is pumped to the compresser house. At the same time the uncondensed vapors and gases are led by the line seen in the foreground, from the foot of the condenser to the compresser house.

4324 Hall Principles and Bayonne Practice.

It will be seen that a number of changes have been made in the Bayonne plant, as installed, which have a somewhat important bearing on the patent situation and will be discussed more in detail below.

In the first place, the 1-inch pipe does not expand immediately in the upright tube filled with rings or short pieces of pipe, but first into an 8-inch line and from there into an empty upright cylinder. We have not been able to detect any appreciable difference in temperature between a point in the 1-inch pipe just before expansion and a point in the 8-inch pipe just after expansion. If anything there is a slight decrease in temperature rather than an increase. This, therefore, is not in line with the Hall claims for further increase after expansion. Furthermore, the first dephlegmator, which is empty, does not collect any appreciable amount of carbon, but most of the carbon, especially in aromatic work, where comparatively large quantities are formed, collects either in the cross-over between dephlegmators A and B or at the bottom of B.

4326 THE CRACKING OF KEROSENE.

In experiments on cracking kerosene a considerable period of time was devoted to short runs, namely, from November 23rd to January 12th. These runs were mostly of eight to twelve hours' duration, and due to a continual starting and shutting down, were not carried out under the most favorable conditions. A run of somewhat over two days was made from January 15th to 17th and from January 17th to February 25th we ran all four converters continuously for fourteen days: At the end of this period the test was stopped, not because of necessity but since it was believed that it had been of sufficient length. There is no doubt that the plant could have been run fully twice as long before it would have been necessary to shut down for cleaning or other purposes. In the table below the results of the runs in these three different periods are given, together with a summary on all kerosene run.

KEROSENE

	Nov. 23 Jan. 12	Jan. 15 Jan. 17	Jan. 22 Feb. 5	Total
Prime White	58,487	39,388	250,106	347,981 gals.
Naphtha	21,227	22,209	130,554	173,990
Lt. Residue	26,313	11,999	87,683	125,995
Hy. Residue	2,296	208	1,624	4,128
Gas & loss	8,651	4,972	30,245	43,868
Gasoline	13,826	11,398	69,537	94,721
Converter Hrs.	313	212½	1341½	1867
Converter output, 24 Hrs.	1060	1287	1244	1218
	Percentages			
Naphtha	36.3	56.4	52.2	50.0
Lt. Residue	45.0	30.5	35.1	36.2
Hy. Residue	3.9	0.5	0.61	1.2
Gas & loss	14.8	12.6	12.1	12.6
Gasoline	23.7	29.0	27.9	27.8

You will note the converter output for 24 hours is given, or the average production of gasoline of 374° F. end point per converter per 24 hours.

It will be seen from these tables that practically 28% of the kerosene was converted into gasoline of 374 end point, and that there was left as light residue and heavy bottoms in the naphtha, about 59%. In order to get a

4327 maximum yield of gasoline it would, of course, be necessary to rerun both the light residue and the naphtha bottoms. Accordingly an attempt was made to crack the light residue but was unsuccessful, due to the rapid carbon formation in certain of the converter tubes. The point at which this carbon formation took place indicated very clearly that it was carbon of evaporation or vaporization rather than carbon of cracking. In other words, the oil as introduced into the converter tube must first be vaporized or distilled before cracking takes place. The vaporization of the light residue left a certain amount of carbon which rapidly accumulated at the point where final vaporization probably takes place. We accordingly distilled the light residue, removed about 10% bottoms and on a 3-day run, from March 1st to 4th, had no trouble at all from carbon formation.

The cracking of the light residue gave us, in turn, a second light residue which was likewise distilled and was run for two days, April 2nd and 3rd.

The naphtha bottoms was separated by distillation from the naphtha and given a one-day run, on April 4th. The summary of these runs are as follows:

RESIDUES

	Light Residue Feb. 19-26	Lt. Residue distilled Mar. 1-4	Residue from Residue Apr. 2-3	Naphtha Bottoms Apr. 4	Total
Product thru	18,256	14,431	8,878	4,411	46,076
Naphtha	7,517	6,295	2,338*	1,257	17,437
Lt. Residue	6,218	6,345	5,720	2,644	20,927
Hy. Residue	2,456	307	256	——	3,019
Gas & loss	2,035	1,484	664	510	4,693
Gasoline	3,611	3,374	1,625	855	9,465
Converter Hours	94	76	48	24	242
Average per Converter, 24 hrs.	922	1,065	813	855	939
	Percentages				
Naphtha	41.3	43.7	26.1	28.5	37.9
Lt. Residue	34.1	43.9	63.7	60.0	45.4
Hy. Residue	13.5*	2.1	2.8	—	6.5
Gas & loss	11.1	10.3	7.4	11.5	10.2
Gasoline	19.8	23.4	18.1	19.4	20.6

* Cooling coils in "B" should be light residue.

180

4328 It will be noted from this that the run on Light Residue, without redistillation, did not show a very large yield of gasoline, due mostly to the very frequent starting and stopping necessary to remove plugged tubes.

After redistilling the light residue the yield was somewhat improved. The yield on residue from residue, and naphtha bottoms, was not satisfactory but it must be remembered that these two runs totaled but three days in length and were, furthermore, made at the conclusion of our run for aromatics which very seriously affected some of our pyrometer couples.

There is no question in my mind that we can safely figure on a yield of 25% from any of the residues resulting from cracking kerosene.

181

4329 PARAFFIN GAS OIL.

Results with Paraffin Gas Oil. Paraffin gas oil was run from April 5th to 29th inclusive.

At the start an attempt was made to use lower temperatures than the 600 to 610° C. used with kerosene, but runs from April 5th to 10th showed that with lower temperatures little if any cracking took place.

It was also seen that carbon from ordinary paraffin gas oil was formed so rapidly in certain of the tubes that cleaning would be required at least every three days. This carbon always formed at a certain point in the converter and was very seldom found in more than three or four tubes. These tubes were situated in the coolest part of the front bank of tubes, which was, in turn, situated in the hotter part of the furnace. Had this been carbon formed by cracking one would expect to have found it in the hottest tubes. That such was not the case proves quite certainly that carbon resulted from vaporization rather than cracking, and that the paraffin gas oil contained a very small amount of heavy material which gradually accumulated carbon at the point where final vaporization took place.

The results of a number of runs of short duration, from April 11th to 29th, are as follows:

Converter, Hours,	585 Gallons	Percent.
Paraffin Gas Oil	107,478	
Crude Naphtha A	37,060	34.6
Lt. Residue A	51,154	47.6
Hy. Residue A	1,447	1.4
Gas & Loss	17,817	16.4
Gasoline	23,651	22.0
Gasoline per Converter, 24 hours	970	

The paraffin gas oil in stock at Bayonne was accordingly distilled, removing as distillate 85% to 90%, and this distilled product was cracked in a continuous run using two converters from April 30th to May 5th inclusive. These two converters at the time of writing (May 9) are still running satisfactorily with no indications of carbon
4330 formation. The results on this run are as follows:

Converter, Hours	72	
	Gallons	Percent.
Paraffin Gas Oil Dist.	13,275	
Crude Naphtha "A"	6,583	49.6%
Light Residue "A"	4,827	36.4
Heavy Residue "A"	..	..
Gas & Loss	1,865	14.0
Gasoline	3,637	27.4
Gasoline per Converter, 24 hours	1,212	

No experiments have been made on the residue produced. The experiments on the residue from kerosene showed somewhat lower percent of gasoline that was obtained by the running of Prime White, but, on the other hand, the runs were not of sufficient length to enable us to obtain proper condition for cracking. It would seem safe to assume a 25% gasoline yield on passing the oil through the apparatus once.

4335 Commendable Features of Hall Process.

In justice to the engineer of the Motor Petrol Company, and to the Process itself, attention must be called to the facts that the plant was completed and the first run made on November 23-24; that in this run 20% of gasoline of 374° F. end was obtained from prime white kerosene; that the operation of the plant was carried on to the end of the run without trouble of any kind. This is somewhat unusual, since in starting a plant of this nature trouble is always liable to be experienced, and adjustments and repairs made, before the plant is in proper shape. The yield of 20.8% gasoline, when temperature conditions for this particular oil had not been worked out, speaks well for the Process. The yield of gasoline was brought up to over 25% after a few experimental runs indicated the correct temperature which should be used, but no alteration,

addition or change of any kind was made during the whole course of the tests with kerosene.

Safety Factor. One of the greatest advantages of the Hall Process, as demonstrated in the plant at Bayonne, is its safety factor. Oil, compressed by means of a steam pump, passes through a meter and into a coil of 1-inch pipe about 700 feet in length, suspended in a furnace. This coil is heated to such a temperature that the oil vapors leaving the furnace have a temperature of about 600° C. The 1-inch tube bearing the hot gases extend upward from the furnace for a distance of about 4 ft., where it enters an 8-inch tube. In entering this tube the pressure, which in the furnace averages about 100 lbs., drops practically to zero. The hot gases and vapors, under atmospheric pressure, are led through this 8-inch tube into the first empty dephlegmator where they are cooled somewhat, still under atmospheric pressure, pass from there to the second and third dephlegmators; from thence to the condenser. From the condenser the lightest vapors and fixed gases are taken to the compresser where their temperature is raised to a point not over 100° C. by the compression step.

Any break in the line between the pump and the converter will simply result in cool oil being sprayed. If the break should occur in the furnace proper the products
4336 of combustion are drawn up the stack and no harm is done. Furthermore, as soon as such a break occurs, it is immediately recorded on the pressure gauge in the control room by a drop in pressure. Under such circumstances the control man at once shuts off the oil supply, throws steam into the line, and such fire as may have existed in the furnace proper is quenched within a few seconds. The only dangerous point where an accident might occur is in the 4-ft. of 1-inch pipe leading from the furnace into the 8-inch expansion pipe, and this can be safeguarded by any appropriate means. After entering the 8-inch expansion pipe, the pressure dropping to atmospheric, no further risk is involved.

Control Room. Mention has already been made of the control room where all of the recording instruments are kept. In this room, and in the adjoining pump room, the pump pressure of the oil going to the oil meters can be controlled, the meters themselves can be regulated to give the required flow of oil, and even the furnaces can be regulated within a certain range of temperature by the auto-

matic control. The control man knows how much oil is going through; what the pump pressure is on this oil; what the pressure is in the cracking tubes; what pressure, if any, exists in the 8-inch tube and dephlegmators; the pressure of the gas going to his burners; the pressure of the steam going to his pumps, and the temperature of the gases leaving the converter coils. The converters are started or stopped in the control room, and the only outside operations required are the handling of the stocks in the yard and the occasional inspection of gas burners by the foreman.

Particular mention should be made of the automatic fire control worked out by Mr. de Florez in conjunction with the Leeds & Northrup Company. The operation of this electric control has been most satisfactory in every way when working on gas and would undoubtedly prove as satisfactory on a mixture of oil and gas could a constant flow of oil be obtained.

4337 Criticism of the Hall Process.

Elaborate Equipment. The first criticism which would be made of the Hall Process as represented by the Bayonne installation is its elaborate equipment, and its comparatively large size for the output of gasoline afforded. The 4-unit installation at Bayonne, which is, of course, proportionally larger than a plant containing a multiple of four units, produces at the best only 5,000 gallons of gasoline a day. Criticism of this feature of elaborateness and comparatively small production can be made only on the basis of comparison.

In this connection, some, although meagre, data is available concerning two competitive processes, the Burton and the Greenstreet.

The Burton Process. The following information on the Burton Process at one of its installations is believed to be authentic.

Capacity of stills,	500 barrels
Charging capacity of stills,	205 barrels
Paraffin Gas Oil of 33 gravity being used	
Temperature, 765° F.	
Pressure, 92 lbs.	
Operating Time:	
Raising pressure,	7 hours
Run,	55 hours
Pumping, cleaning and recharging,	10 hours

Distillate, 55%
Crude Naphtha of 390° F. end point, in distillate, 70%
Total production of 390° F. end point naphtha in 72 hours, 78.9 barrels
Production of one still, in year of 300 days, 7890 barrels

According to these figures, to produce the 375,000 barrels produced by the Hall plant of 48 units it would require 48 Burton stills of the above size and charging capacity. It should be stated that in this particular plant the still bottoms, comprising 45%, are used for fuel oil. No figures for gas loss are given.

Greenstreet Process. On the Greenstreet Process we have only such information on construction as I obtained on a very short trip of inspection, and such figures as were given by the Refinery Manager of the British Ameri-
4338 can Oil Company. Greenstreet used brick furnaces or converters, each converter being composed of three chambers 26″ wide, 20′ 10″ long, 9′ 6″ high. Each of the three chambers in the converter contain two coils of pipe, each coil being made up of 80 feet of 2″ lap welded iron pipe for preheating purposes, and 200 feet of the same pipe for cracking purposes. Through the six coils in the three compartments of each converter Greenstreet passes 500 barrels of oil a day, getting a yield of 110 barrels of gasoline, according to statement of yields given us.

The Greenstreet apparatus, outside of the converter, is very simple, consisting of tanks 24 x 60 in., one tank for each separate coil or six for a converter. These six tanks empty into a common header on a condenser composed of 19-ft. tubes of the following diameters:

4—6″ tubes
4—4½″ tubes
11—3″ tubes
52—2″ tubes.

From the condenser the crude cracked product is taken to storage and is then distilled. It is claimed that that the gas loss is not over 6%.

The distinguishing feature in the Greenstreet Process is its introduction of a certain quantity of steam into the cracking coils together with the preheated oil. Assuming, for the sake of argument, that the figures given us are correct, one of these Greenstreet units in 300 working

days would produce 33,000 barrels; or eleven units would produce practically the equivalent of the 48-unit Hall plant.

The figures on yields cannot be absolutely vouched for, but the simplicity of the construction of the plant is a fact. Some of the measurements recorded were given by the Refinery Manager of the British American Oil Company but appeared to check approximately with observation.

Carbon Formation. The fact that the oil to be cracked in the Hall Process must be vaporized, completely precludes the use of any petroleum product which leaves a residue on evaporation. Thus either a burning oil distillate or a carefully distilled paraffin gas oil must be used.

This of course applies equally to the Greenstreet or
4339 any other tubular process of this nature. Greenstreet, to be sure, was using at the time of inspection a paraffin gas oil similar in appearance to the product giving carbon formation at Bayonne, but the Greenstreet tubes were blown out with air every 24 hours.

Unsaturated Compounds. The Hall Process produced considerable quantities of unsaturated compounds. The naphtha from cracking of kerosene showed on an average of about 20% of olefins, and in the paraffin gas oil experiments, where the temperature was somewhat high, as much as 46% olefins were formed. This olefin formation occurs in practically every process using heat and pressure, although Greenstreet claims that by the mechanical dilution of his vapors with steam he can prevent olefin formation and get saturated compounds. This has not been confirmed although marked samples, supposedly from the Greenstreet process, have shown an absence of olefins. The Burton Process, in spite of the Burton claims, produces considerable quantities of olefins, although probably to not as great an extent as does the Hall Process. What value olefins may have, as compared with paraffin hydrocarbons, is still problematical. The Bureau of Mines first proposed limiting the percentage of olefins to 12% and later removed this restriction.

4343 What Is the Hall Process. Bearing in mind the installation at Bayonne, the descriptions of operation given by Hall and others and the patents, the question may well be asked, What is the Hall Process? The Process, as actually carried out in Bayonne may be said to be:

4344 (a) Passing oil through a coil of tubes under

pressure while subjecting it to a heat of about 600° C.

(b) Passing the vapors from the 1-inch tube into an 8-inch tube.

(c) Passing the vapors from the 8-inch tube into three dephlegmators, the first of which is empty. In these dephlegmators the heavier oils are condensed out.

(d) Condensing by a water-cooled condenser as much as possible of the light fractions, leaving the third dephlegmator.

(e) Compressing the lightest gases and vapors not condensed and after compression mixing them, under pressure, with the distillate from the water condenser.

(f) Finally, condensing this mixture under pressure.

4354 Conclusions.

For the reasons given above, as the result of tests on a plant of commercial size in Bayonne, and as the result of the extended investigation which has been made of the patent situation, I am of the opinion—

(a) That the Hall Process, as represented by the Bayonne Plant, has not been sufficiently developed from the commercial standpoint to warrant our erection immediately at Port Arthur of a plant of large size and capacity.

(b) That this Process has many advantages which I believe may be so developed that larger and more satisfactory yields can be obtained at a smaller investment.

(c) That just what comprises the Process is so uncertain, and the patents and patent protection so weak, we would not be justified in taking an exclusive license under the Hall patents because of our probable inability to use the same in offensive measures.

(d) That, again considering the patent situation, the terms for a non-exclusive license are excessive.

(e) That, on the other hand, it would not be wise to attempt to develop the Hall Process as now represented at Bayonne without a license, since, although we might prove the essential steps to be old, the courts might construe the patents against us because of our

relations with the employees of the Motor Petrol Company.

(f) That since these patents and applications do not appear to infringe any patents or applications of which we have knowledge, it would be desirable for us to obtain a non-exclusive license in order that we might benefit from such protection as these patents might afford.

4355 Recommendations.

1. I therefore recommend that we obtain a non-exclusive license, preferably by outright purchase if the same can be secured for a reasonable amount; or on a royalty basis which will be more commensurate with the value of the patents.

2. I further recommend that if we take a non-exclusive license under a royalty agreement, it be taken in the following manner:

(a) That license shall cover Hall Patents 1,175,910 and 1,194,289. That it further cover the two product applications with the provision that we shall not pay royalties on any product conforming to these specifications not made by the Process; that we, further, obtain a license under the apparatus application No. 77,357 under the same terms as the product applications.

(b) That we, further, be given the option, to be exercised within ninety days after the issue of any United States patent now in the application class in the U. S. Patent Office, of taking a license under such patent.

(c) That we, as provided in the agreement, shall also have an option to take license under any subsequent patent which the Motor Petrol Company shall secure.

(d) That action as to broad claims 9, 13 and 18 of Patent 1,175,909 be determined in conference.

3. I further recommend that we employ Luis deFlores as engineer, to continue experiments at Bayonne, looking toward further improvements in the Hall Process Plant at that point.

K. G. Mackenzie.

2436 DX 634.

4356 DX 634.

In the United States District Court,

Northern District of Illinois,

Eastern Division.

Universal Oil Products Co.
vs.
Globe Oil & Refining Co. } No. 10744.

New York, October 26, 1917.

Hall Process Runs

Mr. R. C. Holmes,
New York Office.

Dear Sir:

Referring to your letter of October 23rd, and the questions contained therein.

1st. It may be said that we have operated practically independent of the Hall people since April 1st, 1917. Mr. deFlorez was taken sick the early part of March and did not fully recover so that he could exercise any supervision until the latter part of May. Hamilton Merrill, his assistant, was present but being more or less unfamiliar with the process did not accomplish much under his supervision of operation, so that responsibility rested almost entirely upon ourselves. About the middle of May, by arrangement with the Motor Petrol Company, all of the representatives of the Motor Petrol Company left the plant, and since that time we have been operating ourselves without the presence of any representative of the Motor Petrol Company. In line with our agreement of July 11th I understand that we started operating as of July 1st on our own account.

2nd. We operated all four converters continuously from January 22nd to February 5th, a period of two weeks, using Water White. We would have been able to continue operating some further period without the necessity

4357 of shutting down any of the converters. I base this conclusion on the condition of the converters upon inspection at the end of this run. The yields for this run, both total and average daily figures, are as follows:

Run #24

		Gravity	Percent
Water White	250,106 gal.		
Crude motor spirit or naphtha distillate	130,544 gal.	53.1	52.2
Light residue	87,683 gal.	41.3	35.0
Heavy residue	1,624 gal.	39.8	0.6
Gas & Loss	30,305 gal.	....	12.2

Gasoline of 374° F. end, total production, 69,537 gals.

Average Daily Figures,

(4 Converters)

Water White	17,843 gal.
Crude spirit or naphtha distillate	9,321 gal.
Light residue	6,263 gal.
Heavy residue	116 gal.
Gas & Loss	2,164 gal.
Gasoline of 374° F. end point	4,966 gal.

(1 Converter)

Water White	4,461 gal.
Crude spirit or naphtha distillate	2,330 gal.
Light residue	1,566 gal.
Heavy residue	29 gal.
Gasoline of 374° F. end point	1,342 gal.

Prior to this time we had operated mostly on one or two converters, occasionally, for very short periods, with three converters. From the 5th to 17th of February the plant was closed down for repair to the foundations. From the 17th to the 1st of March we operated mostly one 4358 converter on residue.

During the month of March we operated entirely for benzol and toluol. During the month of April we operated mostly on distilled residue and distilled and undistilled paraffin gas oil.

From April 30th to May 22nd we ran Converters Nos. 1 and 2 continuously on distilled paraffin gas. We shut down each converter once during the period for blowing out the

tubes with steam to remove carbon accumulation and it was necessary to clean the dephlegmators in Nos. 1 and 2 once during this run to remove accumulated carbon.

The totals for the run, which may be considered practically continuous, covering a period of twenty-three days, are as follows:

	Gallons	Percent
Distilled paraffin gas oil	192,330	
Crude naphtha	82,145	42.7
Light Residue	74,653	38.8
Heavy Residue	1,503	0.8
Gas & Loss	34,031	17.7
Crude naphtha showed boiling below 374° F.	47,270	24.5

From the 23rd of May until the 1st of September we did not run converters continuously since we were trying out our various experiments with steam, etc.

Starting September 1st we ran continuously on Converters Nos. 2 and 4 until October 10th, a period of forty days.

4359 Our total running time for the month of September, 1917, with causes of shut-downs, are as follows:

		#2		#4	
9/ 1	Shut down	6 hrs.	1" bend too long	1 hr.	Fires low
	Ran	—	—	164	—
9/ 7	Shut down	—	—	10	Clean Deph.
	Ran	552½	—	379	—
9/24	Shut down	½	Clean tubes	½	Clean tubes
	Ran	128½	—	133	—
9/29	Shut down	14½	Plug in boiler blew out. Other boiler dirty.	14½	No steam
	Ran	18	—	18	—
30 days of 24 hrs.		720 hrs.		720 hrs.	

	#2	#4
Ran	699 hrs.	694 hrs.
Shut down	21 hrs.	26 hrs.
	720 hrs.	720 hrs.

	#2	#4
Running time	699 hrs.	694 hrs.
Boiler shut down	14½	14½
	713½ hrs.	708½ hrs.
Percentage running.	99.1%	98.4%
On basis year of 365 days,	361.7 days	359.2 days

These figures, however, are too good to represent the general average, and are approximation of the running time, and time necessary for repairs will be given in answer to Question 4.

4360 3rd. In reply to Question 3, outside of laboratory treats on products not exceeding ten gallons we have made but two distillations of the naptha distillate on a larger scale, one distilling with straight fire, the results of which tests were practically worthless, and the other distilling with fire and bottom steam. This run was made in one of our two 200-barrel stills which we have at Bayonne, erected, you will recall, by Sommer. There are no air condensers or backtraps on these stills, and the condensing system is not only antiquated but entirely inadequate to secure proper condensation of the very volatile products which we were using. Our running records are as follows:

Charge, 7,958 gallons Naphtha Distillate

	Gallons	Percent
Took off	3699	46.5
Bottoms	3197	40.2
Loss	1062	13.3

The naphtha distillate charged was made from distilled Paraffin Gas Oil. The distillations on the charge and distillate are as follows:

4361

	Charge	Distillate
Gravity	42.4	45.4
Distillation:		
Boils	99°F	152°F
10%	178	193
20%	237	217
30%	278	240
40%	306	260
50%	348	280
60%	374	305
70%	396	327
80%	420	352
90%	461	379
95%	...	413
End	484	420
Percent off	93	97
Percent off below 100°C	15	17
Percent off below 150°C	38	59
Percent off below 190°C	60	88

Ten gallons of the distillate were treated with sulfuric acid of 50% strength on a basis of four pounds of concentrated acid to the barrel. This was agitated for three hours, allowed to stand for twelve, the sludge drawn off and the product neutralized and washed. After treatment it tested as follows:

Gravity	41.4
Distillation:	
Boils	160°F
10%	212
20%	240
30%	262
40%	285
50%	308
60%	330
70%	355
80%	383
90%	437
95%	547
End	572
Percent off	98
Percent off below 100°C	10
Percent off below 150°C	47
Percent off below 190°C	77

4362 This product was then redistilled, 77% being taken off, testing as follows:

Gravity	45.5
Distillation:	
Boils	162°F
10%	210
20%	230
30%	248
40%	263
50%	280
60%	296
70%	315
80%	335
90%	360
95%	386
End	396
Percent off	97
Percent off below 100°C	12
Percent off below 150°F	65
Percent off below 190°C	93
Color, in 18″ cell,	8.3

The distillate was then filtered through earth, testing as follows:

Gravity	44.7
Distillation:	
Boils	167°F
10%	209
20%	232
30%	248
40%	266
50%	286
60%	304
70%	320
80%	337
90%	363
95%	404
End	404
Percent off	95
Percent off below 100°C	11
Percent off below 150°C	59
Percent off below 190°C	92
Color in 18" cell	2.0
Doctor	O.K.(no discoloration)
Sulfonation	35%

4363 The loss on the entire treat of the first distillate was 20%, divided approximately as follows:

Acid and lye-sludge	5%
Filtering	5%
Evaporation and rehandling	10%

From these results the following approximate figures for Loss and Recovered Product can be obtained:

Distillation of crude naphtha distillate; losss,	13.3%
Treatment of distillate from above redistillation and filtration; loss,	20%
Total loss on basis of original naphtha distillate:	22.5%
Gasoline, as per final test above, based on above distillate,	33.1%
Naphtha distillate obtained from Paraffin Gas Oil,	42%
Gasoline, based on original Paraffin Gas Oil,	14%

Much better figures should be obtained with the proper facilities, both for distillation and treating. We have given the product a second redistillation, which should not be

necessary in actual practice and we have, as above stated, no proper facilities for proper distillation. In like manner we should be able to avoid a large percentage of the loss with proper agitators.

In this connection I might say that we have made two shipments of naphtha distillate to Port Arthur, one of approximately 6,000 barrels, in May, and another of 4,000 barrels in August.

4364 4th. I have already touched above on our operating time for the month of September. From this run we figure the probable periods required for repairs in the course of a year as follows:

13 days for cleaning dephlegmators. This would mean cleaning each dephlegmator every two weeks, allowing 12 hrs. for the cleaning period.

2 days for putting in new tubes, estimating that each set of tubes would last 6 months.

24 days, or two days per month, for unexpected trouble, making a total of 39 days, or an actual running time of 326 days.

Based on running 326 days, and using Paraffin Gas Oil, on which our experiments have been based up to the present time, we would require for the present installation (four converters) approximately 132,000 barrels per year, which would give us, approximately 34,000 barrels, based on percentage of naphtha distillate distilling below 374°F.

5th. The losses in operation of the cracking plant were shown in the month of September to be 4.2%. This does not include gas made, which was used for fuel, since this is an operating charge rather than a direct loss. Were it not for our use of this gas it would be necessary for us to use fuel oil. This loss would figure approximately 7,000 barrels a year, but could be materially reduced were means provided for carrying off and recovering the dissolved gases which are now lost when the naphtha distillate is dropped down in pressure on pumping to the storage tanks.

4365 On weathering we found the following figures for the month of September:

On hand September 1st,	1014	barrels
Delivered to tank,	1975	"
	2989	"
Stock on hand October 1st,	2853	"
Loss,	136	barrels, or 4½%

Conclusions: As in the Burton Process, we finally condense in the Hall Process under pressure. This gives us a product containing considerable compression gasoline, which is very difficult to hold. We have, moreover, a disadvantage as compared with the pressure still product, in that we have a larger percentage of unsaturated hydrocarbons, and therefore a greater tendency to heat up on acid treating, causing still further loss of the compression gasoline. For this reason I am convinced that the present method of procedure, whereby all of the naphtha, including the compression gasoline, is recovered in one cut, will not be satisfactory in practice. I conclude this assuming that we will use an acid treat for refining. The Hall people propose the use of Fullers Earth which would to a certain extent, possibly, cut down the losses. Work which we did at Bayonne, however, was not satisfactory, the Fullers Earth being apparently very rapidly exhausted. The next possibility was the use of Fullers Earth for the very light product, acid treating the heavier ends. We will work further on this as soon as we finish our run on Paraffin Gas Oil, strictly according to the Hall method.

In actual plant construction a modification of the
4366 air condensers, which the Hall people term "dephleg-
mators" would seem to me to be advisable. It will be necessary, I believe, to have some sort of a drum-shaped tank in which the carbon and pitch-like material can be thrown out. With our present installation the first dephlegmator seems to do very little except to retard the flow, all of the pitch-like constituents being precipitated out between the first and second dephlegmator and on the perforated pipes in the second dephlegmator. It would seem to me that one proper carbon pot for collecting the pitch would be sufficient, and that we might use, beyond this carbon pot, regular air condensers in order to get as good a fractionation as possible.

Our results so far have, furthermore, shown that much sweeter, more saturated products are obtained from burning oil than from Paraffin Gas Oil. Furthermore, the new light colored Paraffin Gas Oil from Port Arthur, which is, I understand, strictly a paraffin base product, seems to give a crude naphtha distillate of better odor than the more or less mixed stock which we carry continuously at Bayonne. This may be due to a certain extent to the lower percentage of sulfur in the strictly paraffin base Paraffin Gas Oil, and also to the fact that in ultimate

composition it undoubtedly contains more hydrogen. Between, therefore, a burning oil distillate and a gas oil the burning oil distillate will give a product showing a much larger percentage of saturated hydrocarbons.

Very truly yours,
(Signed) K. G. MacKenzie.

KGM-RB

4367 DX 635.

New York. January 17, 1918.

Hall Process.

Mr. R. C. Holmes,
New York Office.

Dear Sir:

I am transmitting herewith a record of the Hall Process for the month of October, November and December, 1917.

October.

The October figures are divided into two parts; the total is also given, the first covering the period, up to October 12, in which distilled paraffin gas oil was used, the other period covering from the 12th to the end of the month, in which light yellow paraffin gas oil was used. The total converter hours for this month were 1488 against a possible maximum of 2976. A total of 114 converter hours were necessary for repairs. Certain of the converters were intentionally kept idle for 474 hours while we were experimenting for the best conditions for this light paraffin gas oil, and most of the remaining non-operating time was caused by trouble with our compressor. We have, you will recall, but one compressor which has been doing practically constant service since the 1st of the year, with the result that the time has been reached when extensive repairs had to be made. I am giving these figures since the yields for this month are not the yields which could be obtained from a plant of this size working under proper conditions. We would, for instance, in a larger plant have additional
4368 compressers for extra service.

November.

During November, because of the shortage of oil we at no time operated more than two converters and during a considerable part of the month only one converter. Our actual running converter hours were, therefore, only 855 out of a possible maximum of 2880. Light yellow paraffin gas oil was used throughout this month with the exception of somewhat less than 900 gallons of Prime White which it was necessary to use in an emergency.

December.

During December it was necessary to use Prime White up to December 8th because of lack of light paraffin gas oil. We ran Converters Nos. 1 and 3 practically up till the 18th, when we started all four converters and ran three and most of the time four converters for the rest of the month. The total maximum possible hours were 2976, and the actual running hours were 1430.

Observations.

The most important observations which we have made over this period are as follows:

1. It is not possible with any grade of paraffin gas oil we have yet tried to get as saturated a product, or, on the average, as high a yield as with Prime White kerosene.

2. A properly distilled paraffin gas oil, such as the product which we have been running since the 8th of December and testing as follows, may be used without appreciable carbon formation in the tubes over a long period of time.

4369 Paraffin Gas Oil—

Laboratory No. 36129B

Color in 1/2" cell	6.0
Gravity, Specific	38.6
Flash, Pensky-Martin	148° F
Sulfur	0.44%
B. S.	Zero
Distillation:	
Stars	367° F
10%	442
20%	466
30%	485
40%	502
50%	516
60%	533
70%	550
80%	570
90%	608
95%	650
96%	680 End

Since starting to use this product on the 8th of December, and using it on all four converters since the 17th of December, we have not had any appreciable trouble with carbon formation in the tubes, and the converter tubes are still working in a satisfactory manner.

3. The light yellow paraffin gas oil mentioned above is a much better material to crack than the redistilled paraffin gas oil obtained from the usual stocks which we market from Bayonne. This is shown by the following distillations:

4370

	Distilled Paraffin Gas Oil	Distilled Paraffin Gas Oil Naphtha	Yellow Paraffin Gas Oil	Yellow Paraffin Gas Oil Naphtha
Gravity	35.9	48.2	38.5	50.6
Bells	345° F	82° F	370° F	89° F
10%	399	157	435	169
20%	426	199	460	212
30%	448	242	482	250
40%	467	284	506	289
50%	484	326	519	332
60%	500	356	536	372
70%	519	409	554	405
80%	544	467	574	438
90%	564	503	610	480
93% E	584	574 End	661	516
97	617 End		675 End	
400° F		69%		69%
Sulfonation		41%		30%

It will be noted that the percentage of unsaturated compounds in the naphtha from the yellow paraffin gas oil was fully 10% lower than from the distilled paraffin gas oil, and this average more than holds true throughout the entire run. In other words a product from strictly paraffin base crude will give a better gasoline than one from a crude semi-asphaltic in nature.

Yields.

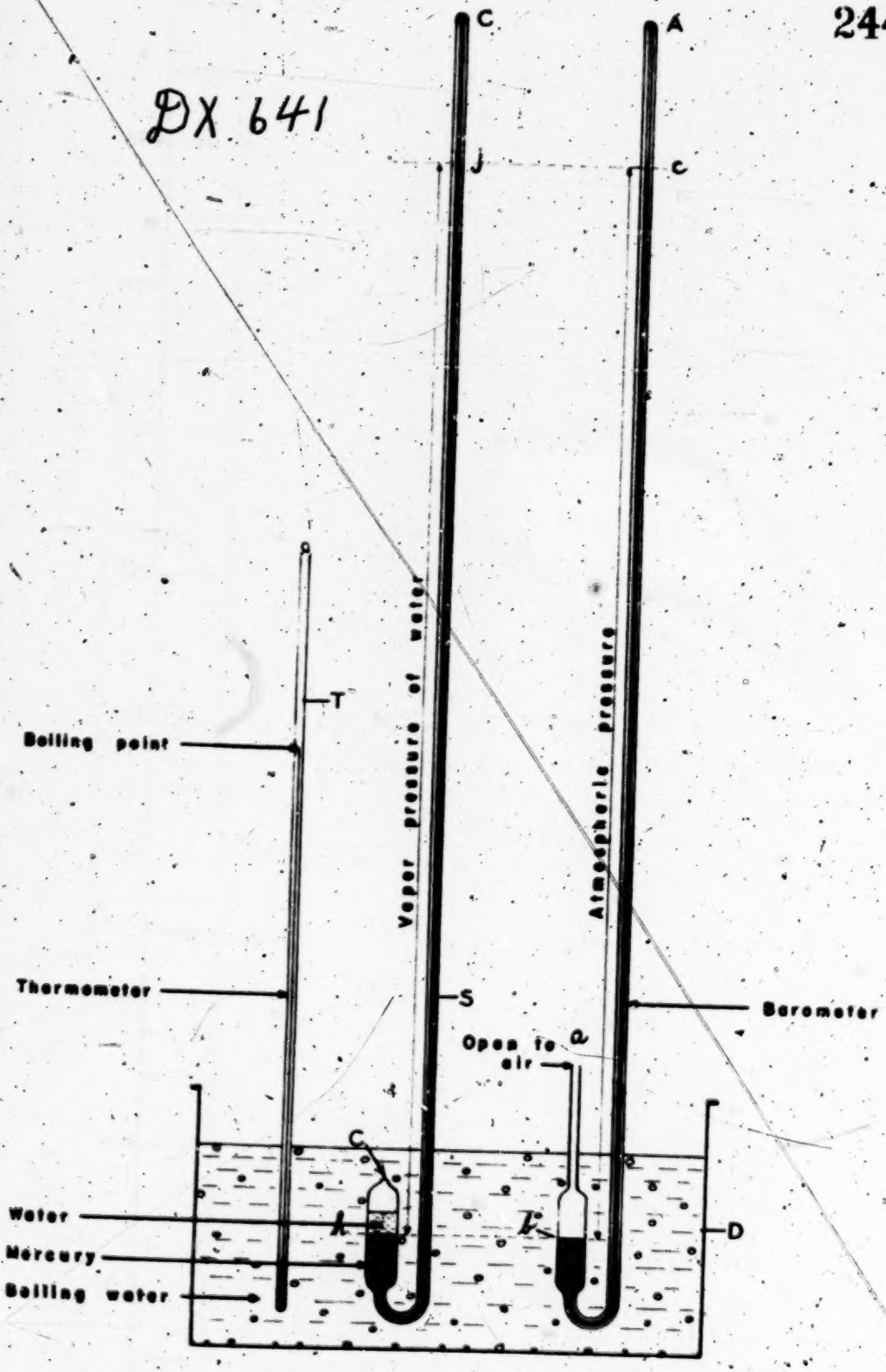
In none of these months have we obtained maximum yields, due to several causes. We have been trying since early Fall to get a satisfactory test on the light yellow paraffin gas oil such as could be supplied from Port Arthur. For this test we refitted two of our converters with new tubes in order that we might have accurate records.

We met, however, many difficulties in getting this 4371 stock. Besides delay in receiving it there was contamination on the part of the Marine Department, rendering two shipments worthless for this purpose, and in the meantime we have to keep the plant running on whatever material was available. Since the two sets of new tubes were the last new tubes that we had and we did not wish to carbonize them or injure them in any way prior to our test with the light colored oil, it was necessary to us to limit the operation of the plant to the two converters having the old tubes. These old tubes had been in use for a considerable time, had been subjected to frequent startings and shutting down, which is of course a severe strain on the system; had been used with dark colored paraffin gas oil, with consequent carbon formation, and as a result were more subject to failure than would have been tubes which had been running continuously on a proper grade of oil. This also decreased our yield, and the fact that the Public Service Corporation of New Jersey, supplying us electric current for the motor attached to the compresser, is frequently shutting off the current because of shortage of coal has not only decreased our yields but has increased the number of leaky unions because of the necessary starting and shutting down. I mention this fact so that it may be understood why the actual product produced is not as great as the four converters are capable of producing. In other words, the actual figures for production shown from month to month should not be taken as the full production of the four converters, but must be corrected to the actual running time plus the necessary repairs.

Very truly yours,

KGM—RB (Signed) K. G. McKenzie.
Enc.

DX 641



Experiment demonstrating the equality of atmospheric pressure and the vapor pressure of water at its boiling point.

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION
UNIVERSAL OIL PRODUCTS CO.
vs.
GLOBE OIL & REFINING CO.
No. 10744
DEFENDANT'S EXHIBIT 642
2451

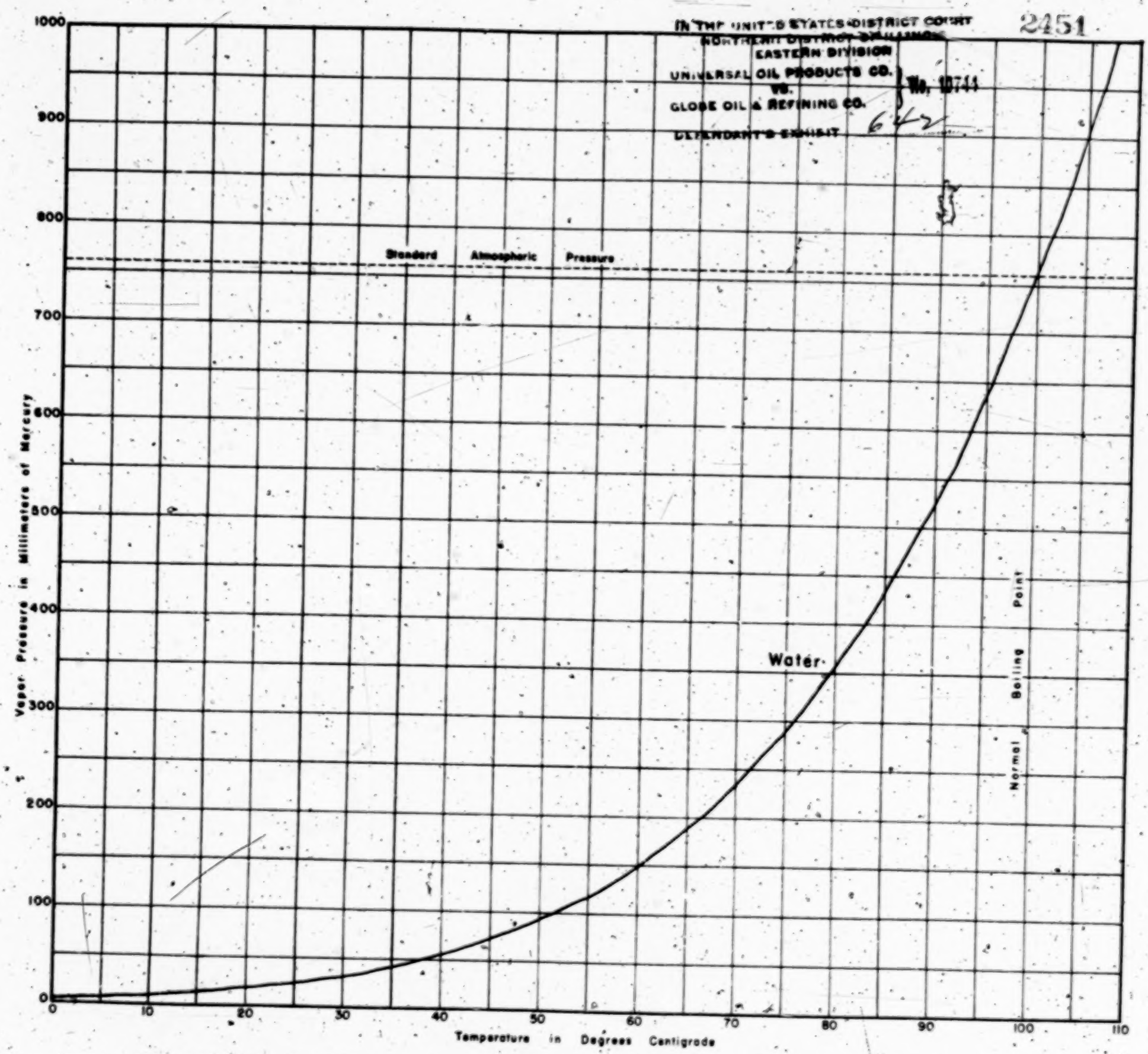
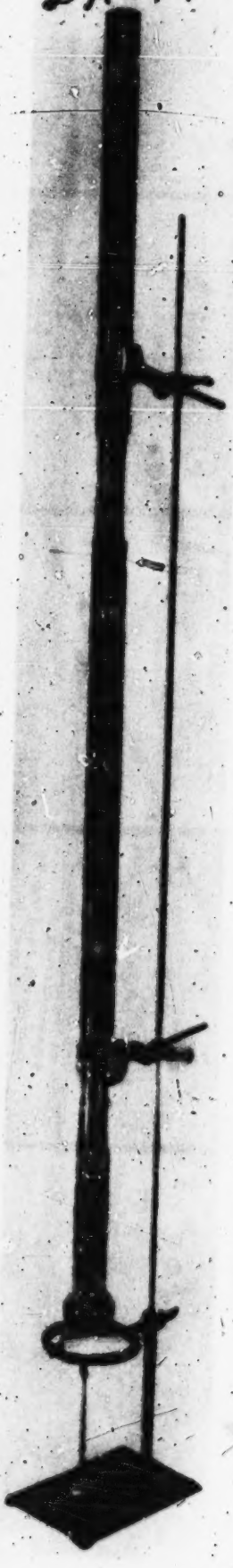


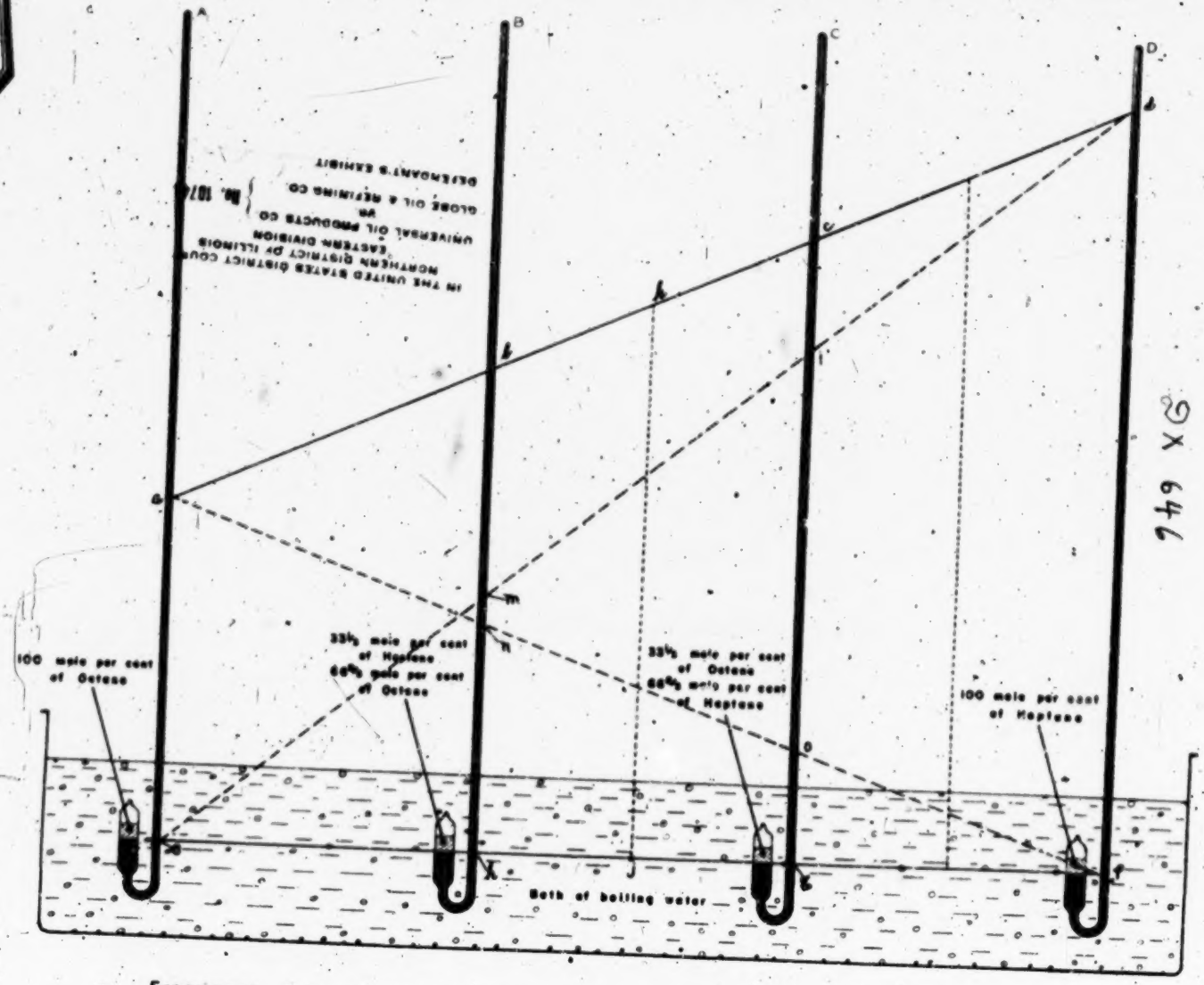
Diagram showing the vapor pressure of water at various temperatures.

DX644



DX645

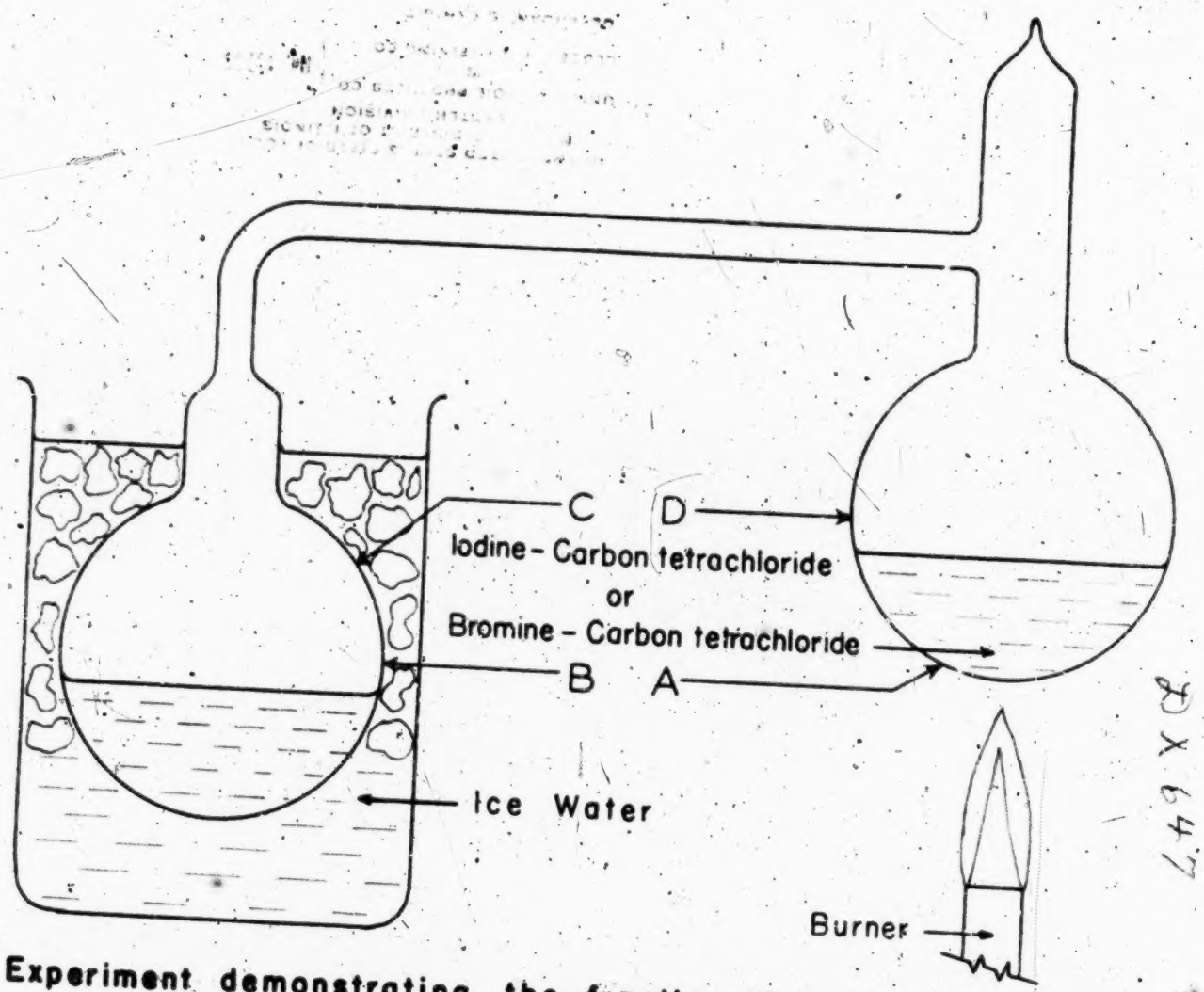
EX 646



Experiment demonstrating the vapor pressures of Heptane and Octane and of their solutions in each other

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION
UNIVERSAL OIL PRODUCTS CO
vs
GLOBE OIL & REFINING CO
No. 1074
DEFENDANT'S EXHIBIT

646 X 2455



Experiment demonstrating the fractionation of a solution during distillation.

8 X 647

2457

4384

DX 648 (EXCERPT).

First Principles of Physical Science, by David A. Wells (1863), at p. 194:

"1284 What is meant by vaporization?

"The conversion of a solid or liquid into vapor; as snow or water is converted into vapor by the heat of the sun."

DX 649 (EXCERPT).

Physics for College Students, by Henry S. Carhart (1910), at p. 375:

"Vaporization.—Vaporization is the transition of a substance from the solid or the liquid state into that of a gas. There are four distinct forms of vaporization, depending on the conditions under which the transition occurs:

"1. Evaporation, in which a liquid is converted into a vapor at its free surface at a relatively low temperature, and without the formation of bubbles.

"2. Ebullition, or boiling, a rapid evaporation at a higher thermal equilibrium, when the liquid is visibly agitated by internal evaporation.

"3. Spheroidal state, in which quiet evaporation, at a lower rate than boiling, goes on with the vapor acting as a cushion between the liquid and a surface at a relatively high temperature.

"4. Sublimation, in which a solid passes directly into the gaseous form without passing through the intermediate liquid state.

"Whether the gaseous condition is reached by one of these processes or another, heat is always absorbed, although the vapor formed is at the same temperature as the solid or the liquid from which it comes. The heat absorbed in the transition into the form of a gas is called the heat of vaporization."

DX 650 (EXCERPT).

A Text-Book of Physics, by Louis Bevier Spinney (1925), at p. 196:

"If water is placed in an open vessel in a room at ordinary temperature it will be observed to gradually disap-

pear from the vessel. This escape of the liquid by passing into the vapor state, a change which takes place wholly at the surface of the liquid is called Evaporation. If the water is heated until it comes to the temperature known as the boiling point, vapor will begin to form in bubbles within the body of the liquid itself. These bubbles of vapor rise to the top, expanding as they rise into regions of diminished pressure, bursting at the surface and setting free large quantities of the vapor. This formation of vapor within the liquid is known as ebullition, or boiling.

"The boiling point of a liquid may therefore be defined as that temperature at which the bubbles of vapor are formed within the liquid. Evidently this formation of vapor is one kind of vaporization, but it is distinguished from the process of evaporation by the fact that the vapor is formed within the liquid."

4385 DX 651 (EXCERPT).

Physics, Advanced Course, by George [redacted] Barker (1892), at p. 309:

"Vaporization of Liquids.—The process of converting a liquid into a vapor is also called vaporization. The production of vapors may take place solely from the surface of the liquid, or it may take place throughout its mass. In the former case the vaporization is effected by evaporation; in the latter, by ebullition.

DX 652 (EXCERPT).

Elementary Treatise on Physics, Experimental and Applied, by E. Atkinson (1879), at p. 278:

"Vaporisation.—The passage of a liquid into the gaseous state is designated by the general term vaporisation; the term evaporation especially refers to the slow production of vapour at the free surface of a liquid, and boiling to its rapid production in the mass of the liquid itself."

DX 653 (EXCERPT)

Essentials of Physics for College Students, By Daniel W. Hering (1912), at p. 115:

"* * * The change of a liquid into the gaseous state is vaporization.

"There are three processes of vaporization; (1) evaporation, where a liquid is converted into a gas quietly and without formation of bubbles; (2) ebullition, where bubbles of gas are formed in the mass of the liquid itself; (3) vaporization in the spheroidal state, where a liquid evaporates slowly, although apparently in contact with a very hot substance."

DX 654 (EXCERPT).

College Physics, by John Oren Reed and Karl Eugen Guthe (1912), at p. 240:

"Vaporization is the process of transforming a substance from the solid or the liquid state into the gaseous state."

DX 655 (EXCERPT).

The Elements of Physics, by S. E. Coleman (1906), at p. 192:

"The change of a substance from the solid or liquid to the gaseous state is called vaporization. Vaporization may take place at the free surface of a liquid, or within its mass at the place where heat is applied. In the first case the phenomenon is generally called evaporation; in the second case, boiling."

4386 DX 656 (EXCERPT).

The Elements of Physics, by Henry S. Carhart and Horatio N. Chute (1894), at p. 148:

"Vaporization is the act of changing a substance into a gaseous condition. If this change takes place slowly, without producing any noticeable disturbance in the body of the substance, it is called Evaporation. If, during the act, the body is visibly agitated, it is called Ebullition."

DX 657 (EXCERPT).

Physics for Students of Applied Science, by J. Edmond Shrader (1937), at pp. 198, 202:

"Change of State.—When heat is supplied to substances the following physical changes may take place:

"1. Fusion or melting, a change from the solid to the liquid state. The reverse change is solidification, or freezing.

"2. Vaporization, a change from a liquid to a vapor. The reverse change is condensation.

"3. Sublimation, a change from the solid state directly to the vapor state. The reverse change is condensation.

* * * * * * *

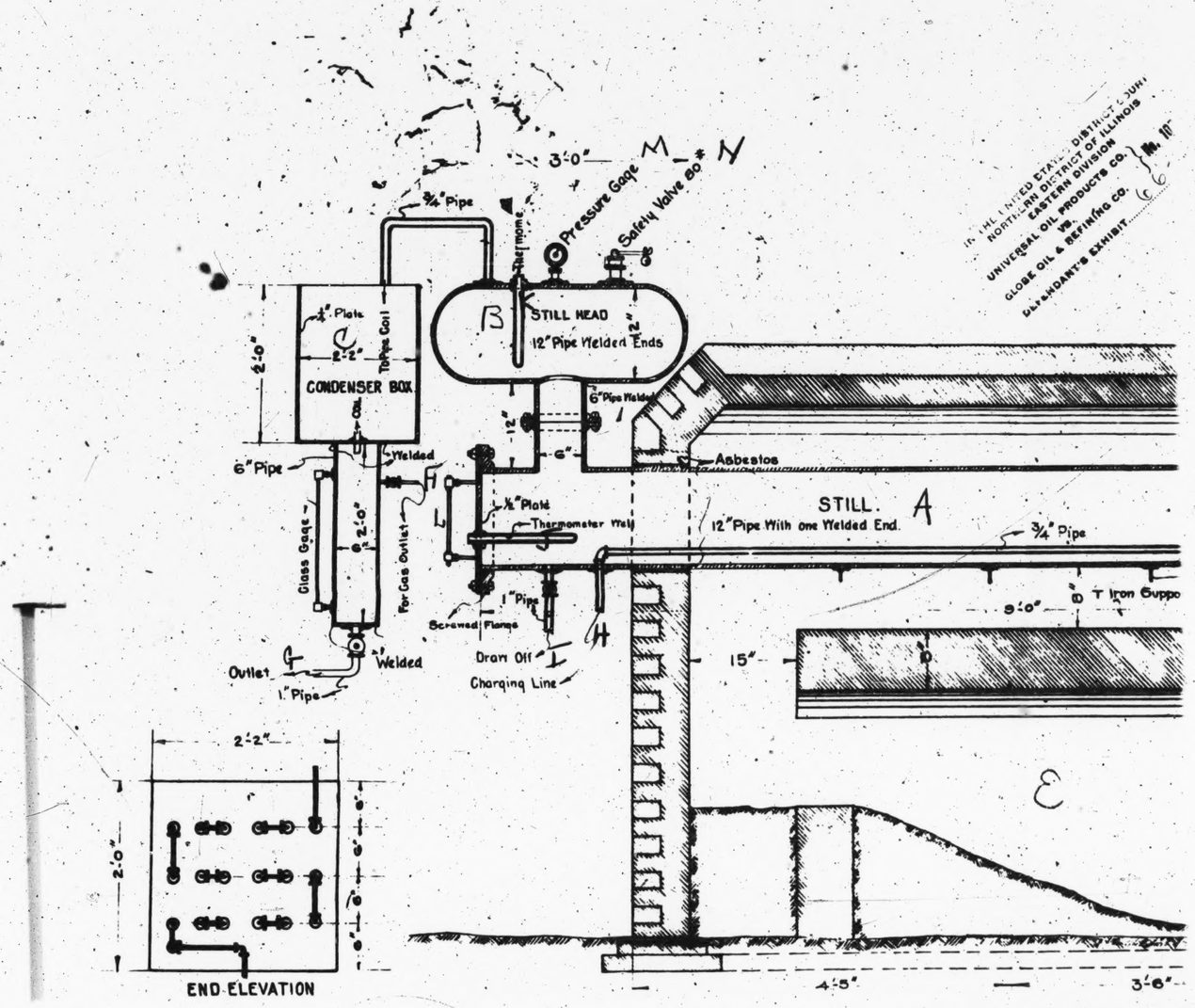
"Vaporization.—Vaporization is the process of changing from a liquid to a gaseous state. * * * Vaporization may take place under two conditions: If vapor is formed only at the surface, it is called evaporation; if vapor is formed within the body of the liquid, the process is called ebullition, or boiling. The amount of heat necessary to change 1 gm. of a liquid at its boiling point into vapor at the same temperature is called its latent heat of vaporization."

DX 658 (EXCERPT).

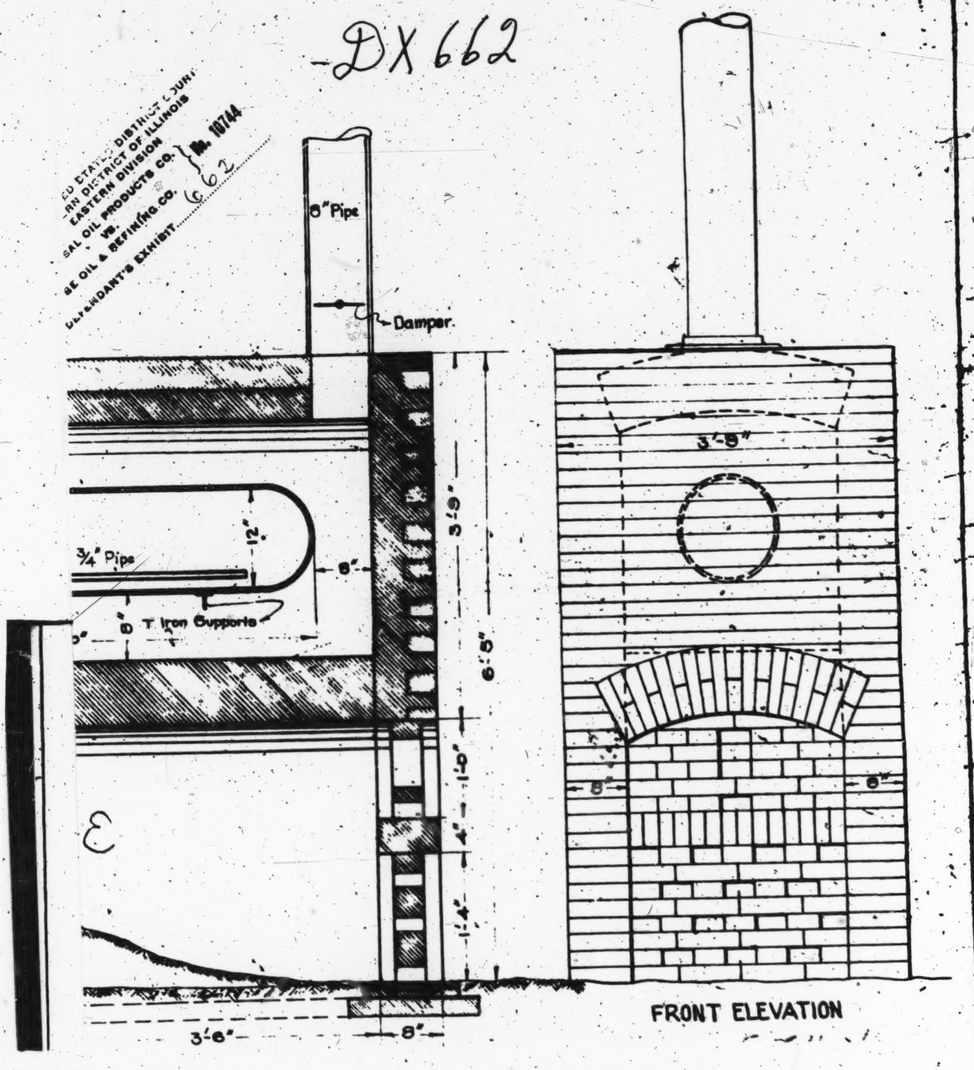
A Textbook of Inorganic Chemistry for Colleges, by James F. Norris (1921), at p. 163:

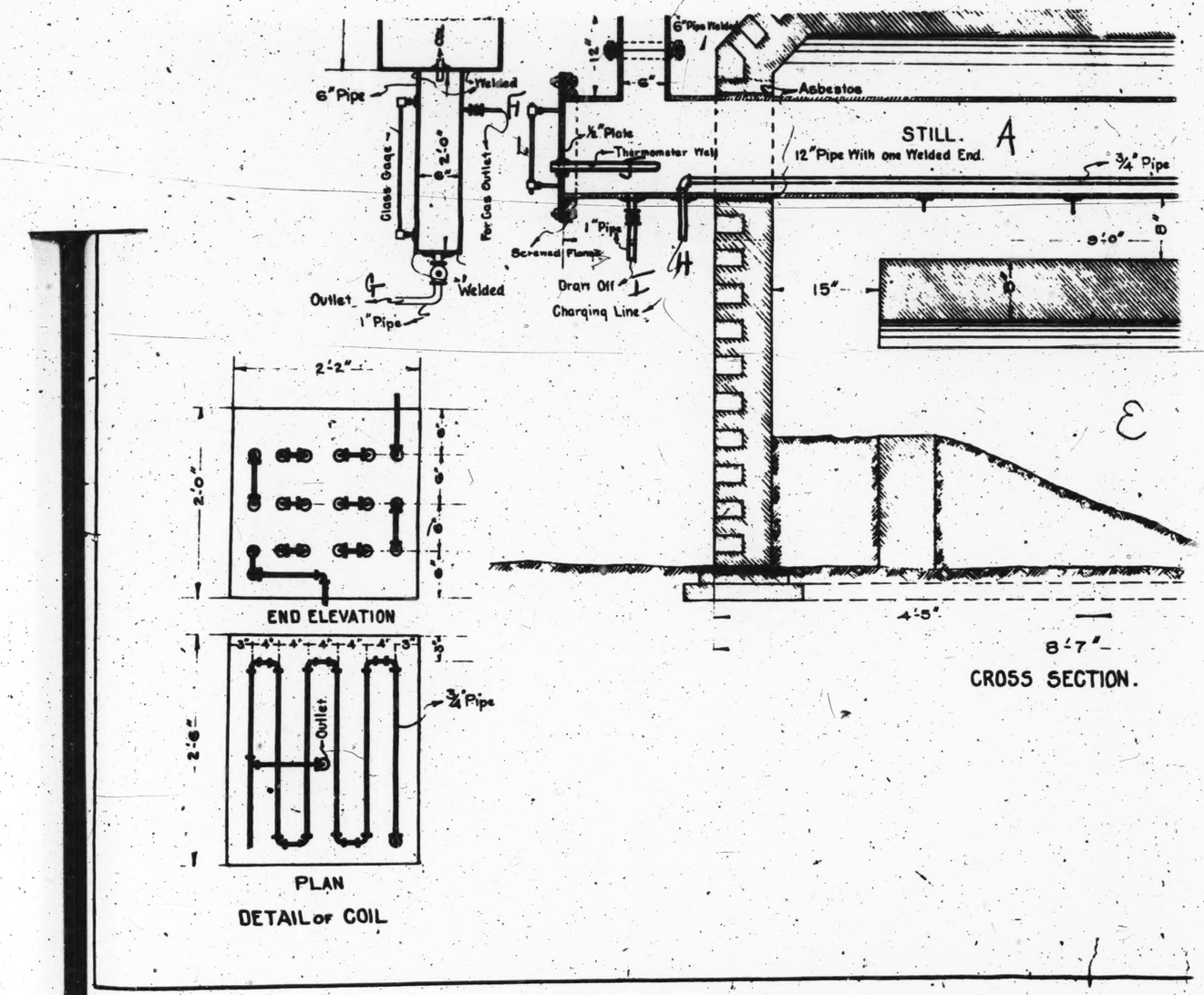
"The conversion of a gas into a liquid is the process opposite to that of vaporization; it is called condensation. In this case heat is set free, the amount being equal to that absorbed in vaporization."

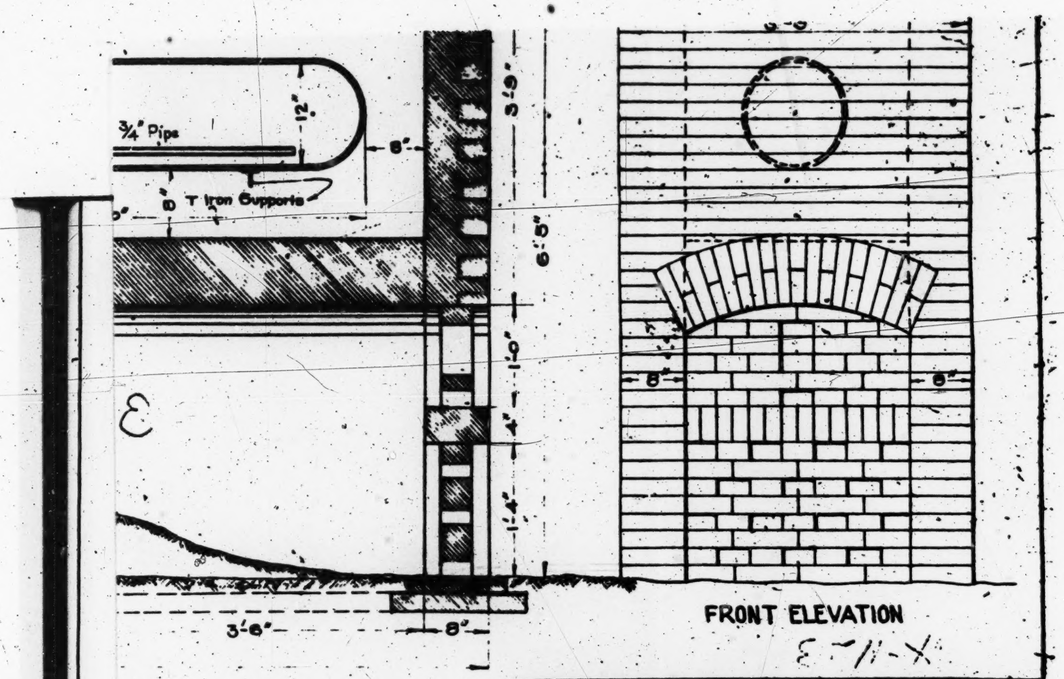
DX 662



IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION
UNIVERSAL OIL PRODUCTS CO.
vs.
GLOBE OIL & REFINING CO.
DEFENDANT'S EXHIBIT No. 10







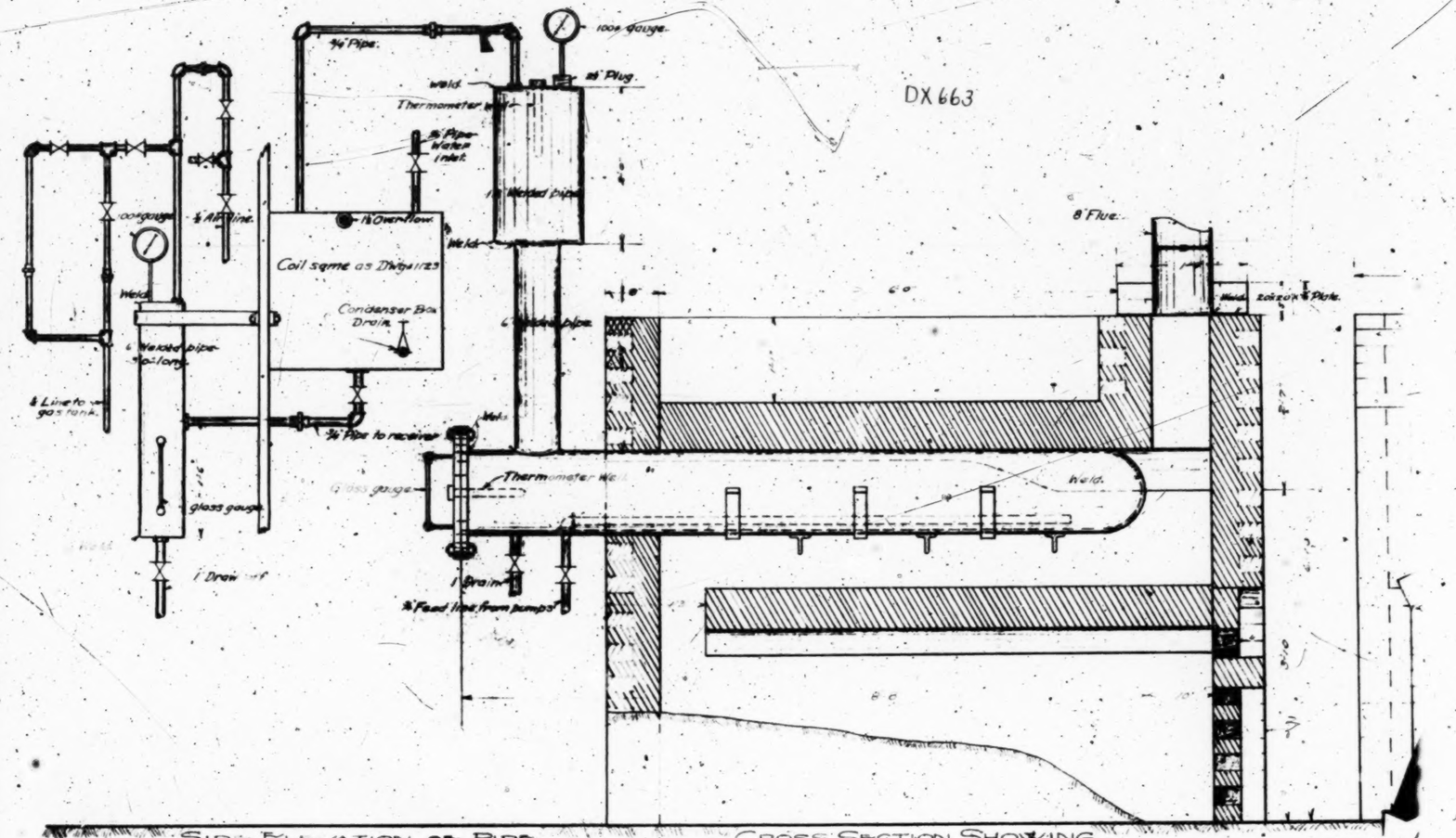
N.

THE TEXAS COMPANY
REFINING DEPARTMENT
PORT ARTHUR WORKS.

DET[illegible]
NEW EXP[illegible]NTAL HOUSE E.G. 201

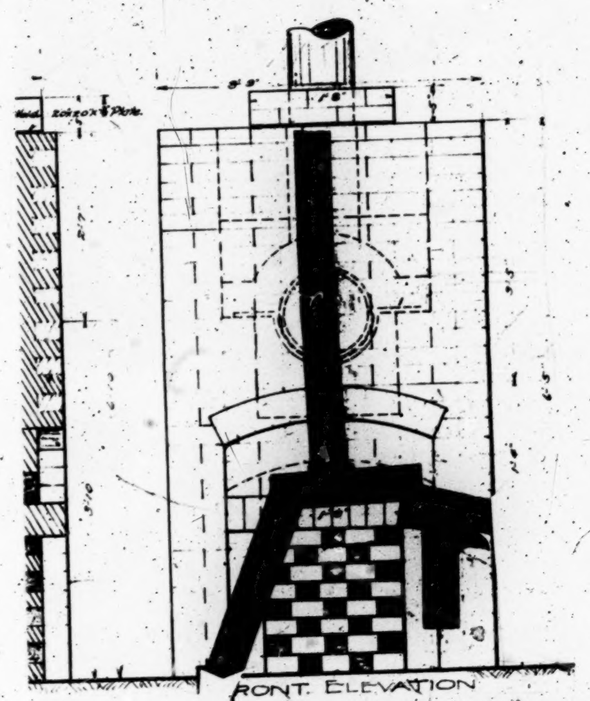
SCALE 1"=1½" DATE 12-4-18 REVISED
DRAWN BY [illegible] SUB[illegible]NTAL NO. PRINT NO.
CHECKED BY [illegible] 568 [illegible] 125

DX 663



SIDE ELEVATION OF PIPE APPARATUS & STILL.

CROSS SECTION SHOWING BRICKWORK



FRONT ELEVATION

Rec. No.

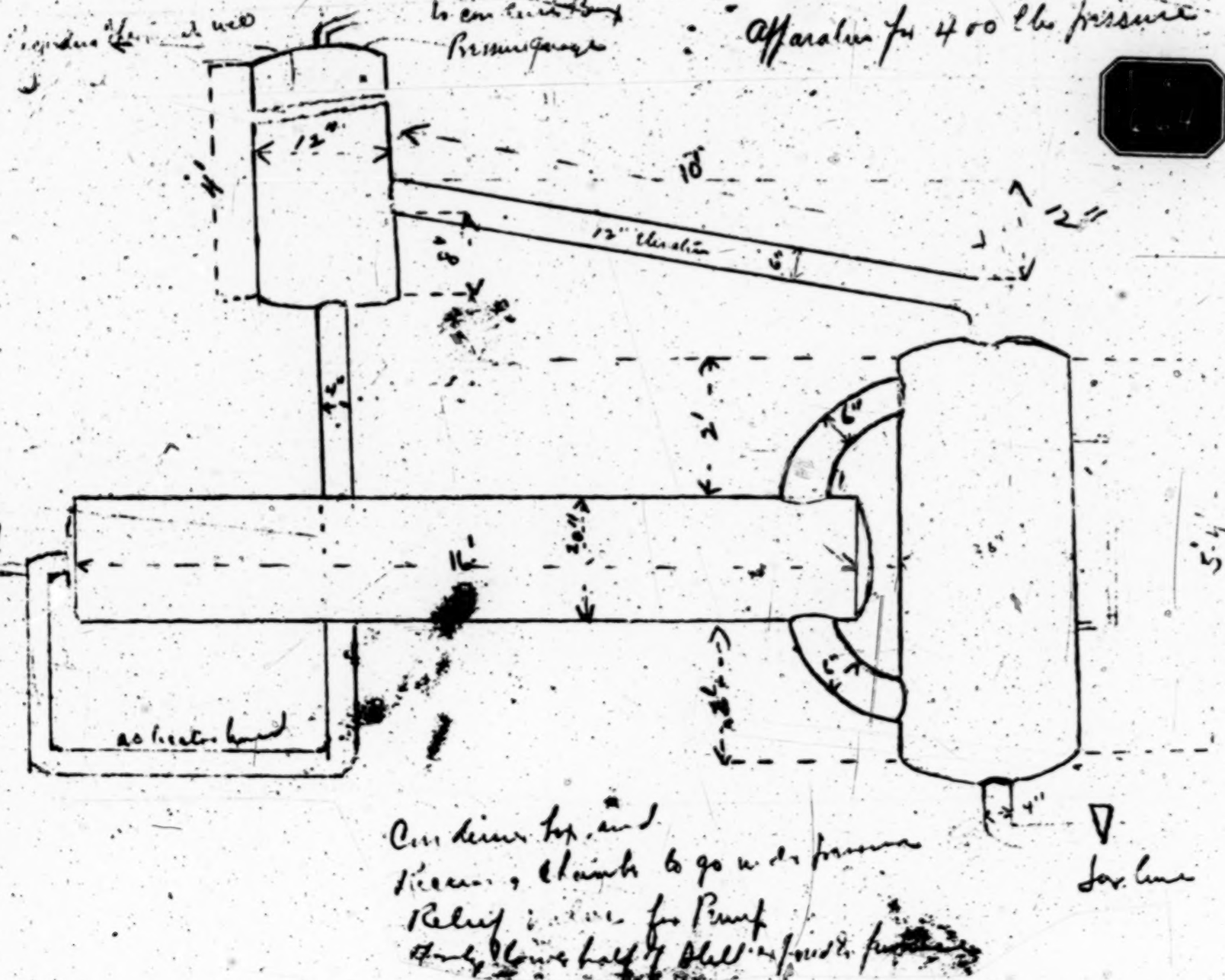
THE TEXAS COMPANY

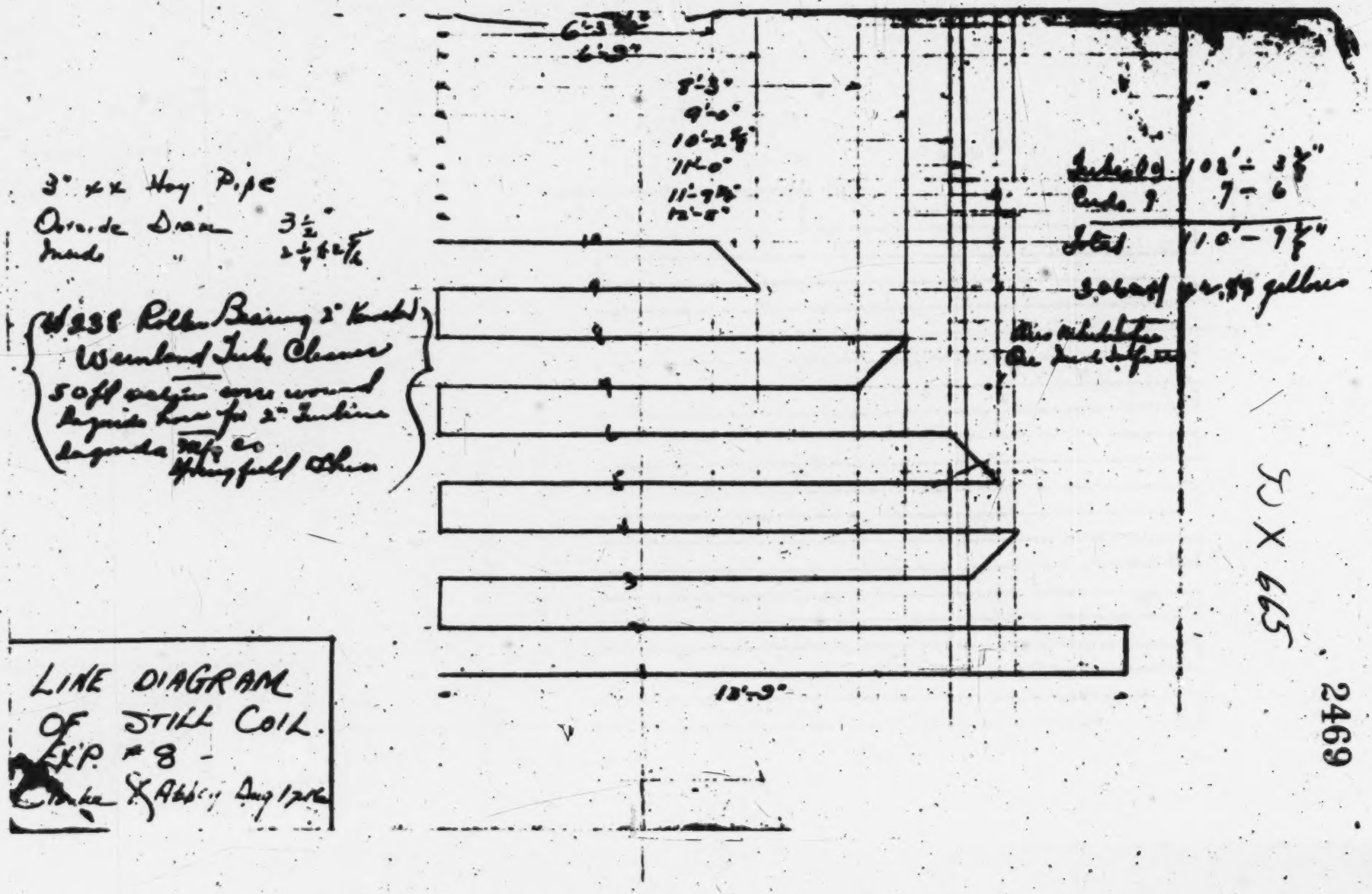
REFINING DEPARTMENT
PORT ARTHUR WORKS

PLANS AND DETAILS

REDWOOD STILL

EXPD.


12"
10'
12" Elevation
6"
6"
6"
6"
4"
Low Line



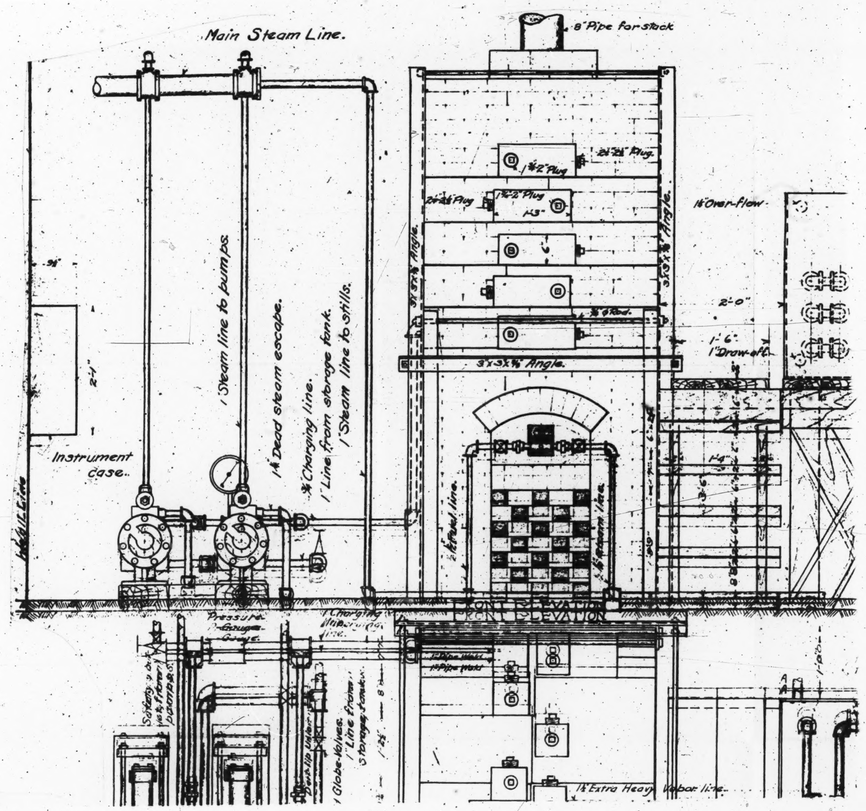
{ #238 Roller Bearing 2" Knuckle
Weinland Tube Cleaner
50 ft asbestos wire wound
Magnolia Rope for 2" Tubing
Magnolia Mfg Co
Springfield Ohio }

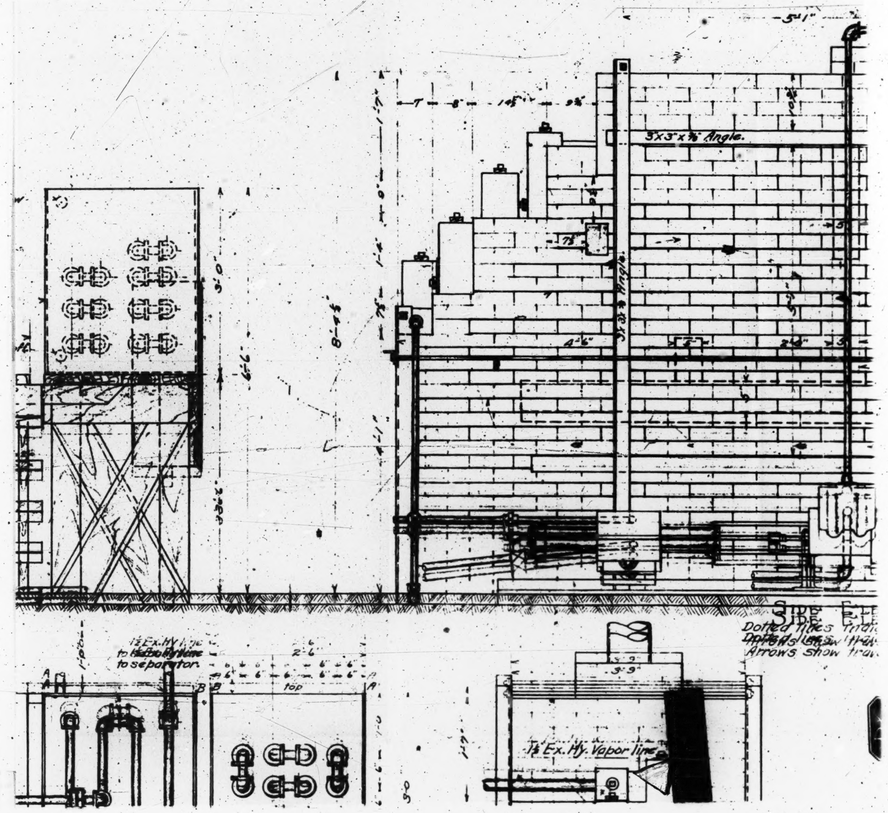
LINE DIAGRAM
OF STILL COIL.
EXP. #8 -
Chas. S. Abbey Aug 12th

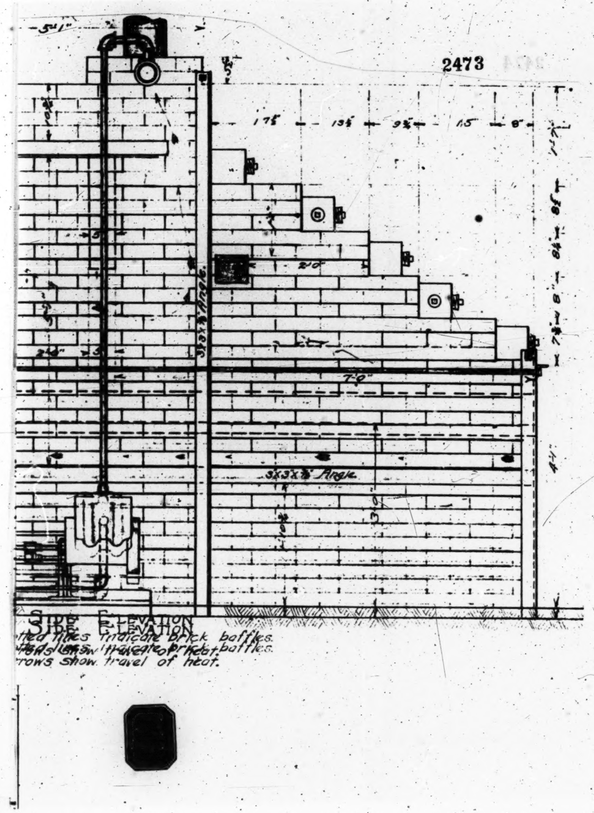
FUX 665

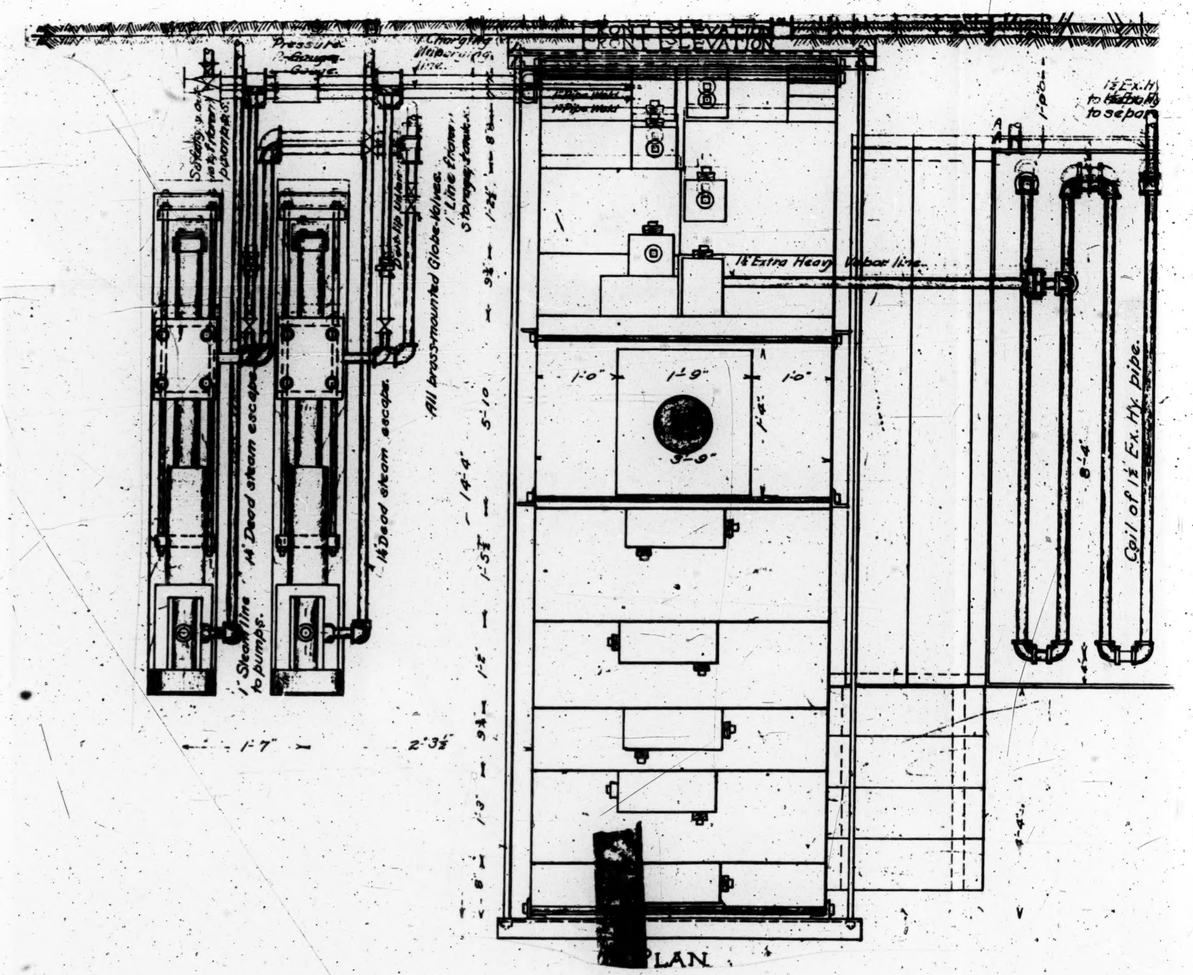
2469

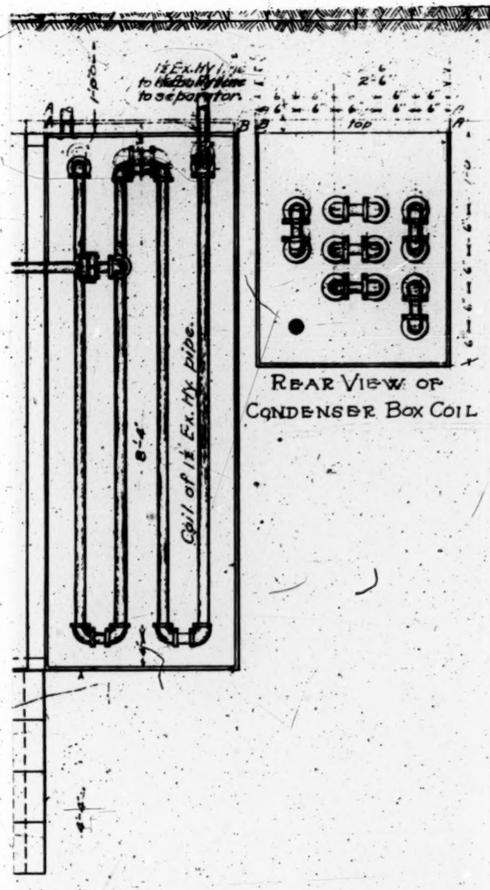
LINE DIAGRAM OF CONDENSER COIL
EXP. NO. 8.
Class X Advg Engineering

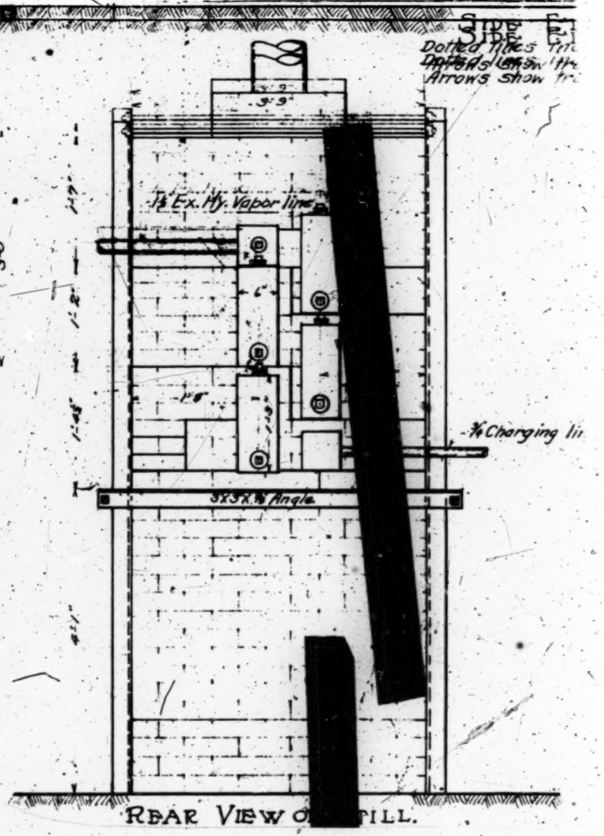

Main Steam Line.
8" Pipe for stack
1" Steam line to pumps.
1" Dead steam escape.
1" Charging line.
1" Line from storage tank.
1" Steam line to stills.
Instrument case.
16" Over-flow
2'-0"
1'-6"
1" Draw-off
3"x3"x⅜" Angle.
FRONT ELEVATION
Pressure Gauge.
Globe Valves.
1" Line from Storage tank.
1½" Extra Heavy Vapor line.


3"x3"x⅜" Angle.
SIDE ELEVATION
Dotted lines indicate brick baffles.
Arrows show travel of heat.
1½" Ex. Hy. Vapor line.


2473
3"x3"x⅜" Angle.
SIDE ELEVATION
Dotted lines indicate brick baffles.
Arrows show travel of heat.


FRONT ELEVATION
Pressure Gauge
To Charging Water Line
Suction from Storage Tank
All brass-mounted Globe-Valves.
Line from Storage Tank.
1½ Extra Heavy Vapor line.
1½ Ex. Hy. to Header
to separator
Coil of 1½ Ex. Hy. pipe.
8'-4"
1" Steam line to pumps.
1½ Dead steam escape.
1½ Dead steam escape.
1'-7"
2'-3½"
PLAN


1½ Ex. Hy. to Header to separator
Coil of 1½ Ex. Hy. pipe.
8'-4"
Top
REAR VIEW OF CONDENSER BOX COIL


SIDE E
1½ Ex. Hy. Vapor line
¾ Charging li
3½ X ½ Angle
REAR VIEW O ILL.

SIDE ELEVATION

otted lines indicate brick baffles.
ashed lines indicate arch baffles.
rrows show travel of heat.

-½ Charging line.

THE TEXAS COMPANY

REFINING DEPARTMENT
PORT ARTHUR WORKS.

PLANS AND DETA[redacted]

HIGH PRESSURE STILL

EXHIB

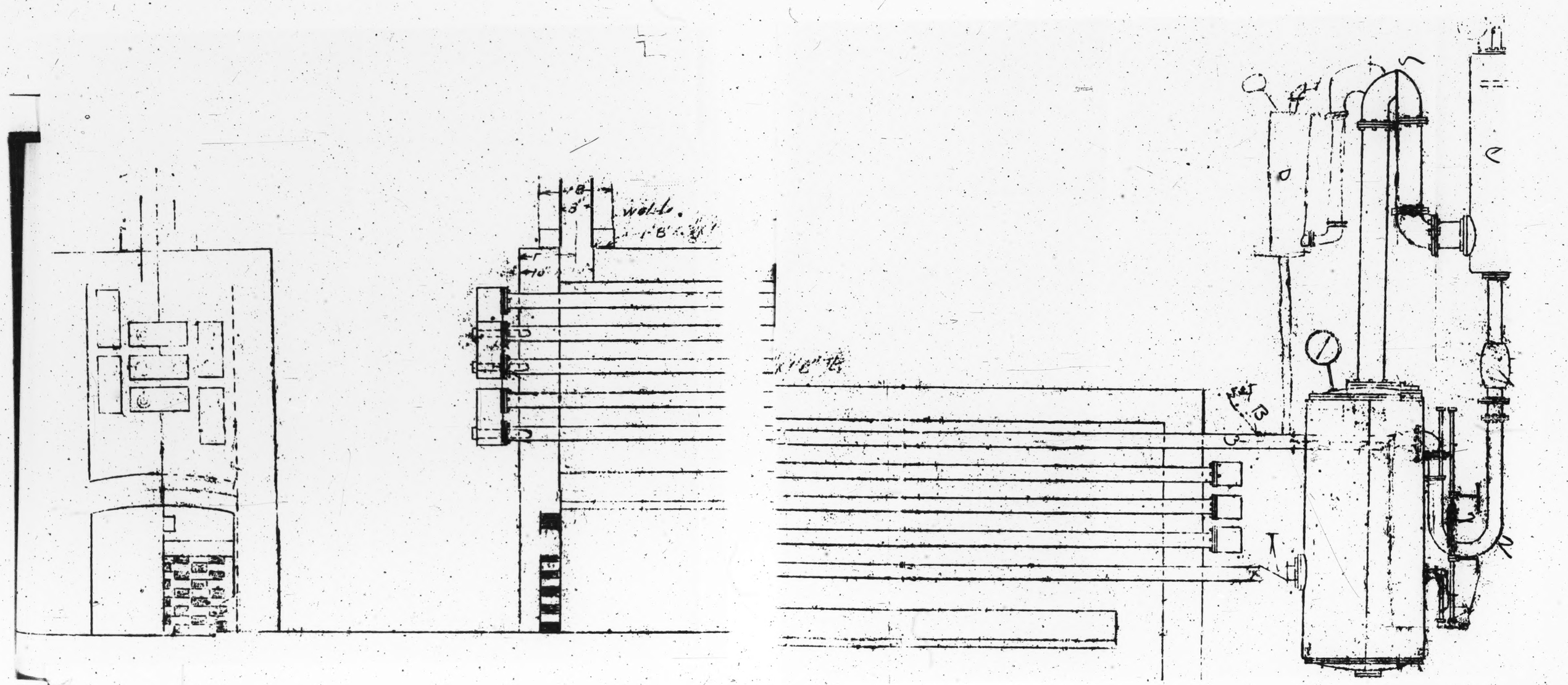
SCALE 1" = 1 FT. DATE 3-18-16 REVISED

DRAWN BY

CHECKED BY

SUPPLEMENTAL NO. 1703 1/2 84

PRINT NO. [redacted] 1562


wall.

THE TEXAS COMPANY

REFINING DEPARTMENT

PORT ARTHUR WORKS

Coal Still

(T.C. Tower Unit)

SCALE

DATE

SUPPLEMENT TO PRINT

DX 667a

THE TEXAS COMPANY

REFINING DEPARTMENT
PORT ARTHUR WORKS

Coil Still

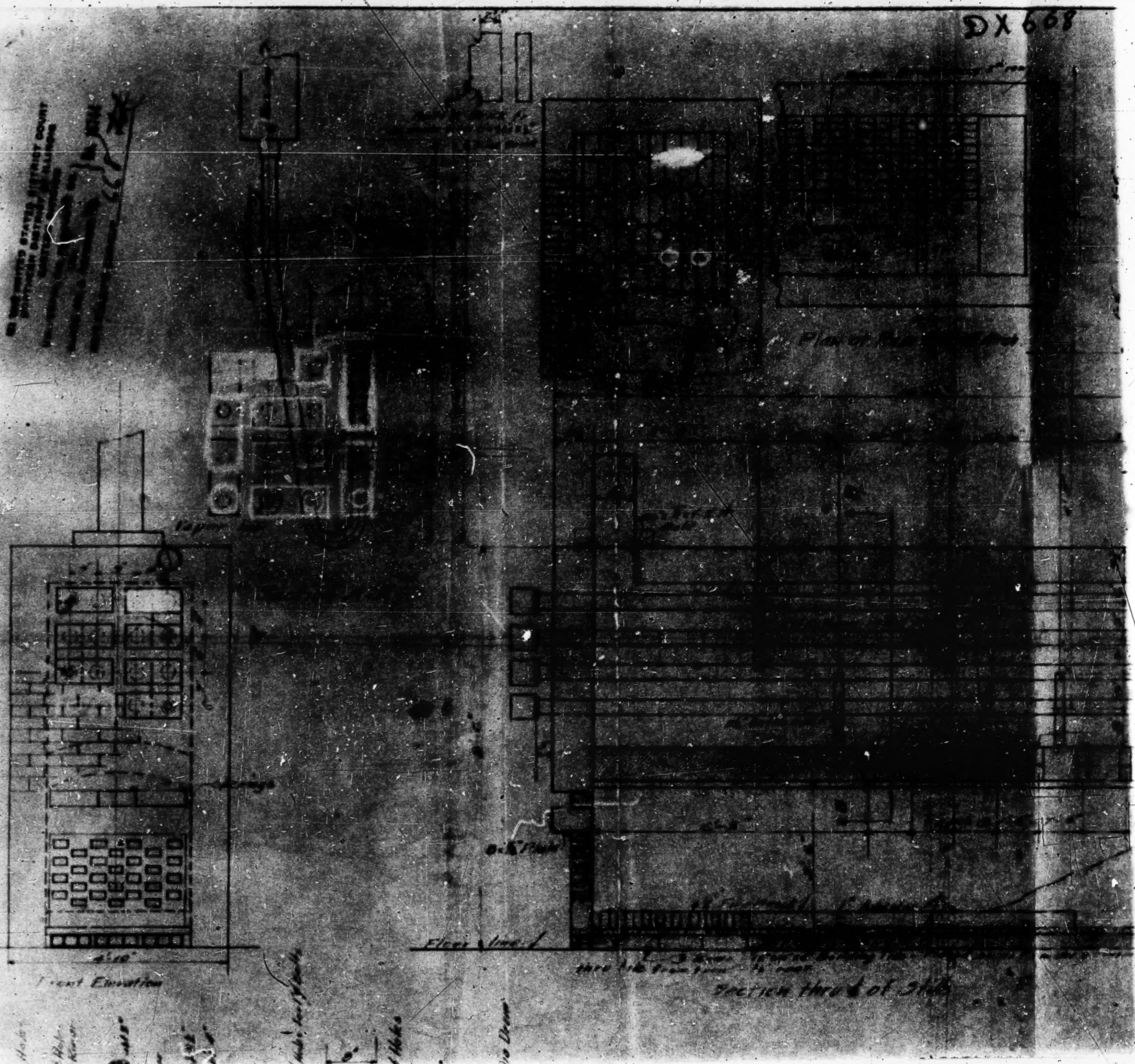
To be traced over

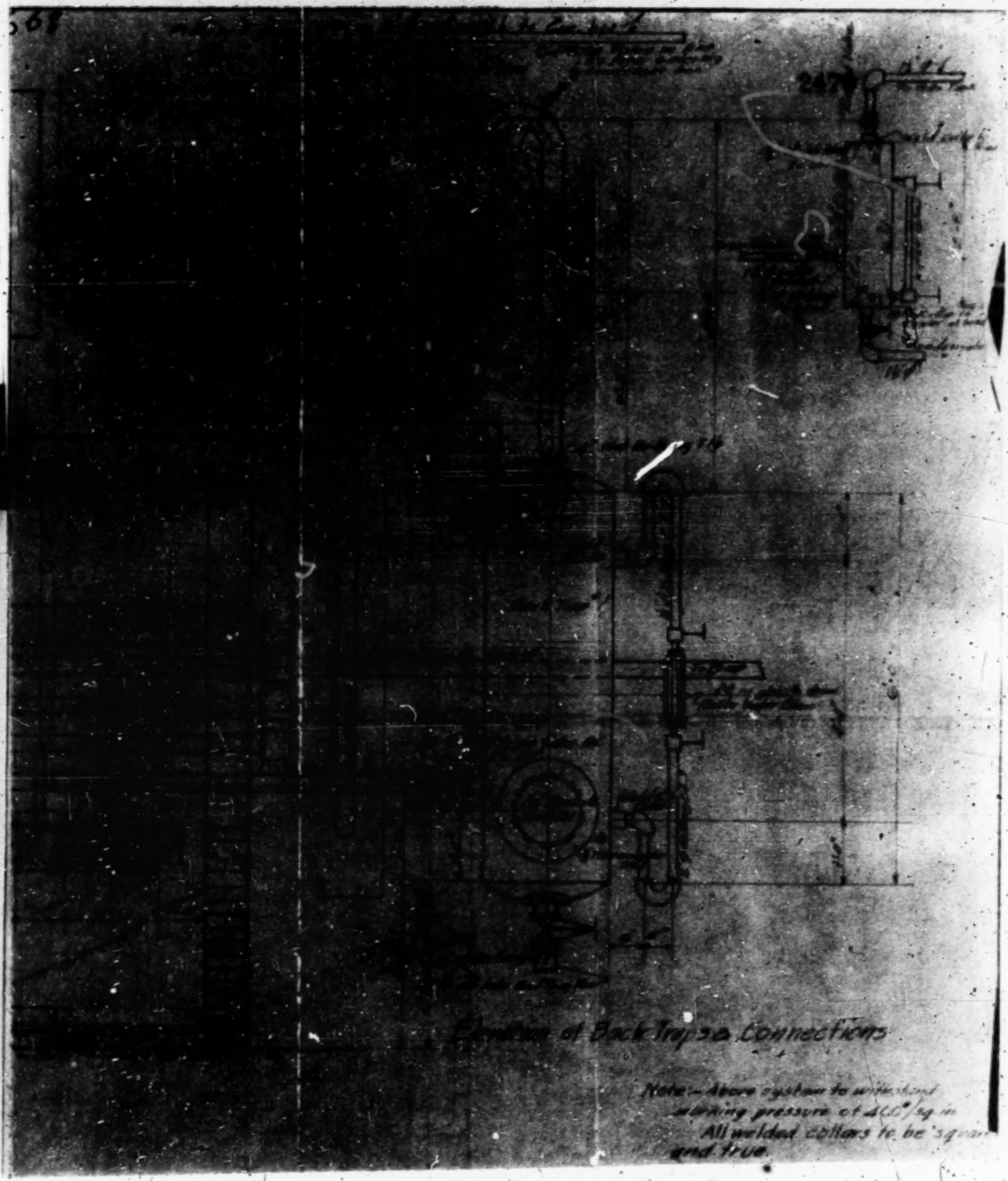
SCALE 1" = DATE 11-6-46 REVISED

SUPPLEMENTARY DRAWING NO.

2477

DX 668





Elevation of Back Input Connections

Note — Above system to withstand working pressure of 400 lb/sq in
All welded collars to be square and true.

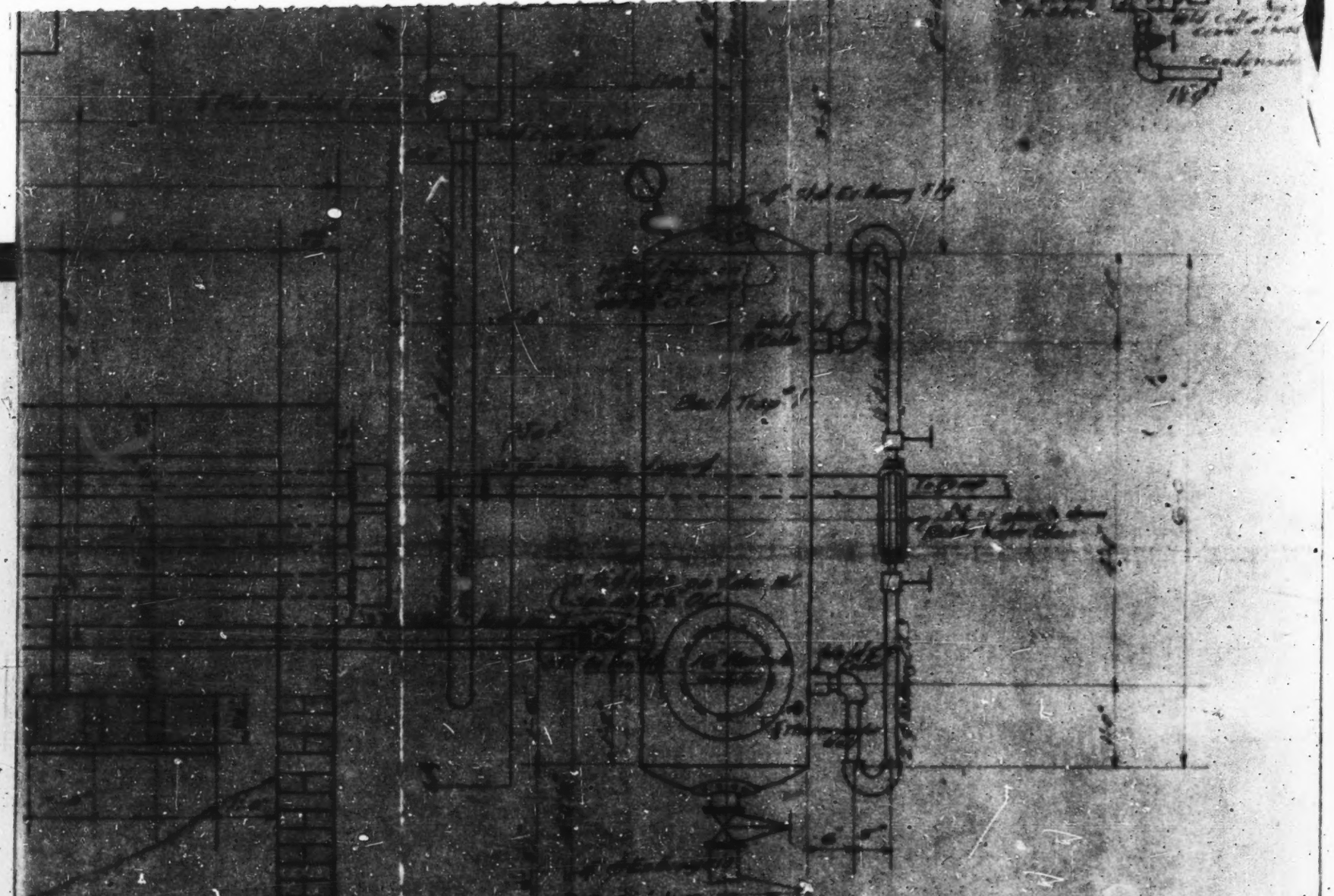
Plan at Rear End of Shed

Section A-A

Front Elevation

Section through Centre of 3rd Bay

Section through Centre of 2nd Bay



Elevation of Back Trap & Connections

Note:- Above system to withstand working pressure of 400 lbs/sq in
All welded collars to be square and true.
Fire Brick to be used throughout.

THE TEXAS COMPANY
REFINING DEPARTMENT
PORT ARTHUR WORKS

HIGH PRESSURE COIL STILL
EXP. No 8

Est 2000

1709

3" N.S. Pipe Thick =
O.D. = 3 5/8"
I.D. = 3"
Thickness 5/8"

Furnace
Length = 15 - 2"
W = 3' - 2 5/8"

Condenser: 171' coil 0.D. = 2" 180 = 196"
O.S. Area = 89.6 sq ft
I.S. Area = 47.6 sq ft

Liquid Volume of Drum 24" O - 3 1/2" th

Drum = (452.39 × 42) ÷ 231 = 82.25 gals
KOR 8" Mercury (201.06 × 8) ÷ 231 = 6.96
Total Drum Bulkhead 5216.81 - (452 + 1037) = 3.22"
92.43 cu ft
12.62 cu ft

Vapor Volume
Drum = (452.39 × 80) ÷ 231 = 78.76 gals
Bulkhead = 3.22 "
Total = 81.97

Volume of Coils 14 tubes 16' 6" long - 12 headers 1 ft each spacing
Tube Total 16½ × 14 × 3672 = 848.2 gals
Headers 13' × 3672 = 4.77
Total = 87.57

Volume Total = Drum. (66+4) × 3672 = 25.70 gallons

Conversion of tubes and furnace
1 ft. 3" tubes = 3673 gallons
3 - 1 ft. 3" tubes = 73.46 gallons

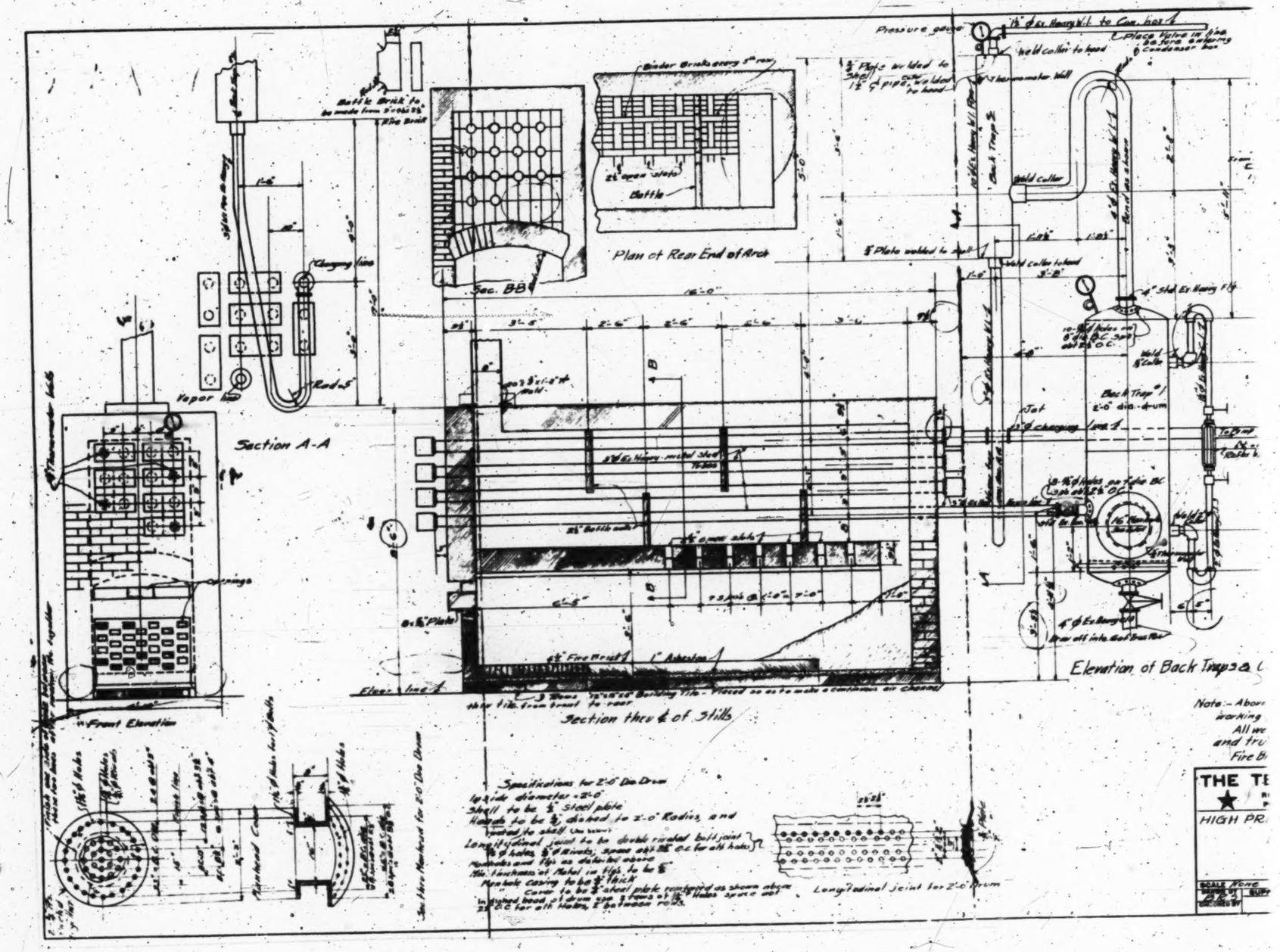
$$q = \frac{KA_2 T_1 - T_2}{L}$$

K = 26
A = .7854 ft²
L = 1 hr
T₁ - T₂ = 107
q = 5/192 ft²

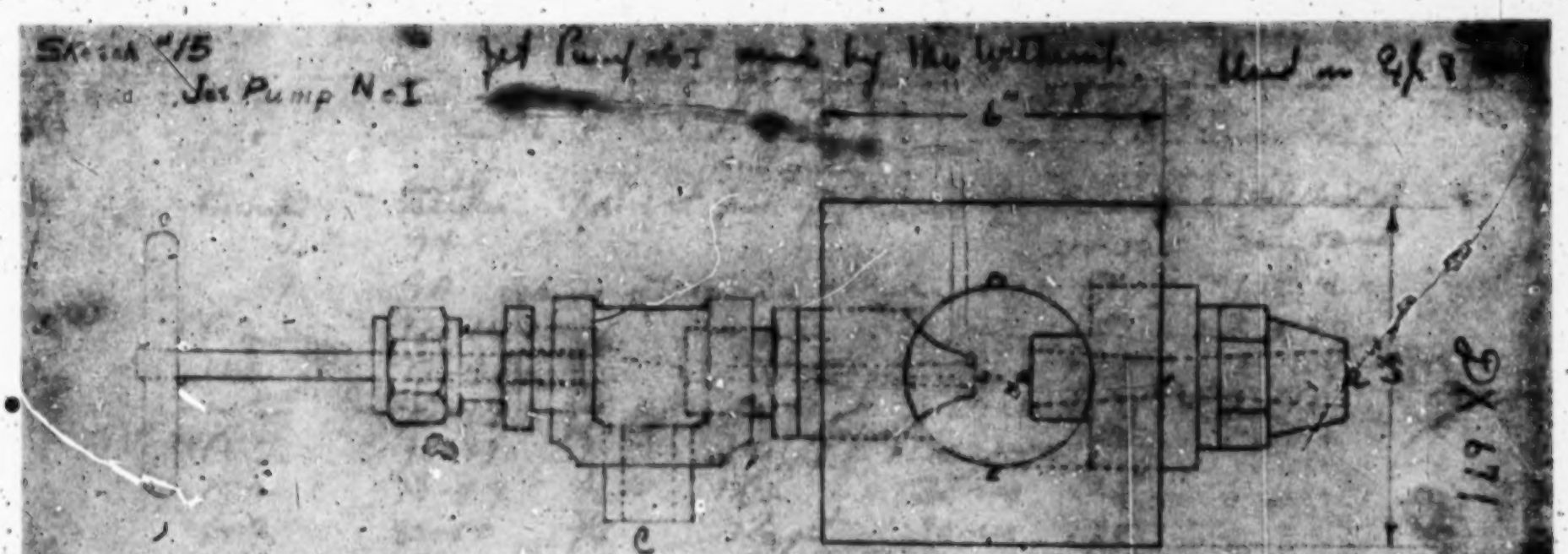
q = .754 = 1 ft tube/.754 ft²/hr
q = 53.894000 tubes/ft²/hr

50 - 860 ft = 400
Total Surface = 944
Total = 944
944 × 53.894 = 100.000 Btu/hr
x = 1.2 gallons/hr

2481


Section A-A
Front Elevation
Plan of Rear End of Arch
Sec. BB
Section thru ℄ of Stills
Elevation of Back Trap 3 & Connections
Specifications for 2'-0" Dia Drum
Longitudinal joint for 2'-0" Drum
Fire Brick Notched for 2'-0" Dia Drum
Binder Brick every 5th row
Battle Brick to be made from 9"x4½"x2½" Fire Brick
Changing line
Vapor line
Rod 5
Thermometer Wells
Pressure gauge
Check Trap 3
Jet
Back Trap 3
2'-0" dia drum
Fire Brick
Asbestos
Steel Plate
Expansion Joint
Base Plate
Anchor Bolts
Reinforced Concrete
Elevation of Back Trap 3 & Connections
Note:- Above system to withstand working pressure of 400 lbs. per sq. in.
All welded collars to be square and true.
Fire Brick to be used throughout.
THE TEXAS COMPANY
REFINING DEPARTMENT
PORT ARTHUR, TEXAS.
HIGH PRESSURE COIL STILL
EXP. No 8
Exp. 2000
1368-1184
1703

Sketch #15 Jet Pump No. I Jet Pump #61 made by the Williams Used on 9/x 9



From Intake Side & Natural Size.
Opening at A: 1/4
B: 1/4
C: 3/4" Pipe con.
From A to B: 3
B - E: 3
Opening at E: 7/8

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION
UNIVERSAL OIL PRODUCTS CO.
vs.
GLOBE OIL & REFINING CO.
No. 8744
DEFENDANT'S EXHIBIT

DX 671

2485

149 XD

Jet Pump Test 5/8/17

Pumps	Nozzle Sizes	Valve at	Jet Pump	Time	Pressure	Total flow gal
1	74				250-320	3 mi 50 sec
1	90 same steaming above				0	1 " 46 "
1+2	72-46				150	2 - 10
1+2	72-46				175	2 - 14
1+2	75-47	1/4			150	2 - 16
1+2	75-47	1/4	3 gal/jet	1 min sec	150	
1+2	75-47	1/2	1 1/2	35 sec	125	
1+2	80-50	3/4	1 1/2 jet	30 sec	140	
1+2	80-50	1	1 1/2	27 sec	135	
1+2	76-48	1 1/4	1	27	130	
1+2	76-48	1 1/2	1	25	125	
	51-61	Slowest rate of pumps to prime				

8 X 672

2487

Sketch #23— Exp #8 Tubular Still With Decomposition Drum.
Page #1
Seak. 1-1

Specifications

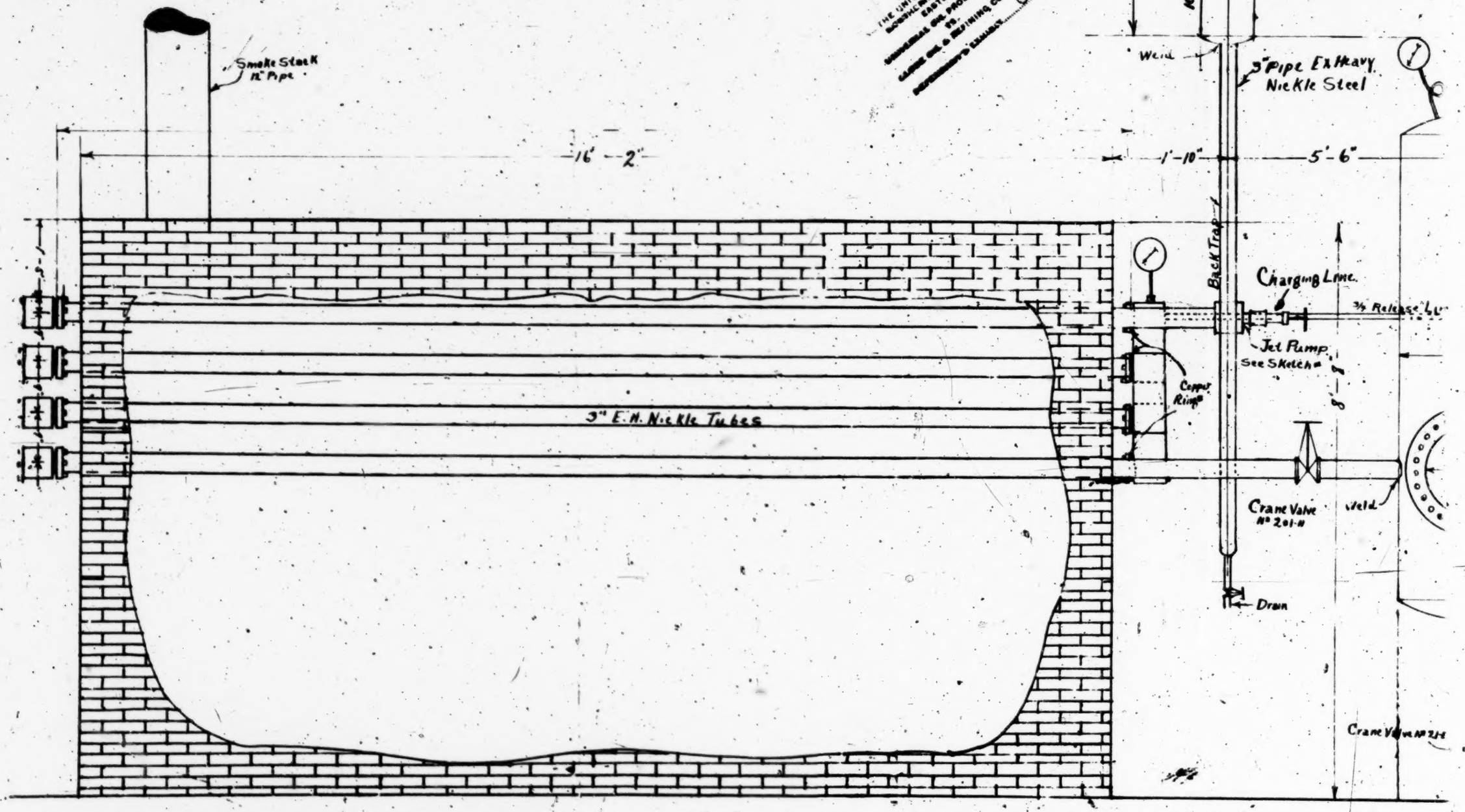
Gauges - Ashcroft. 500# For Presure - Nathan B-9 For Liequid Level

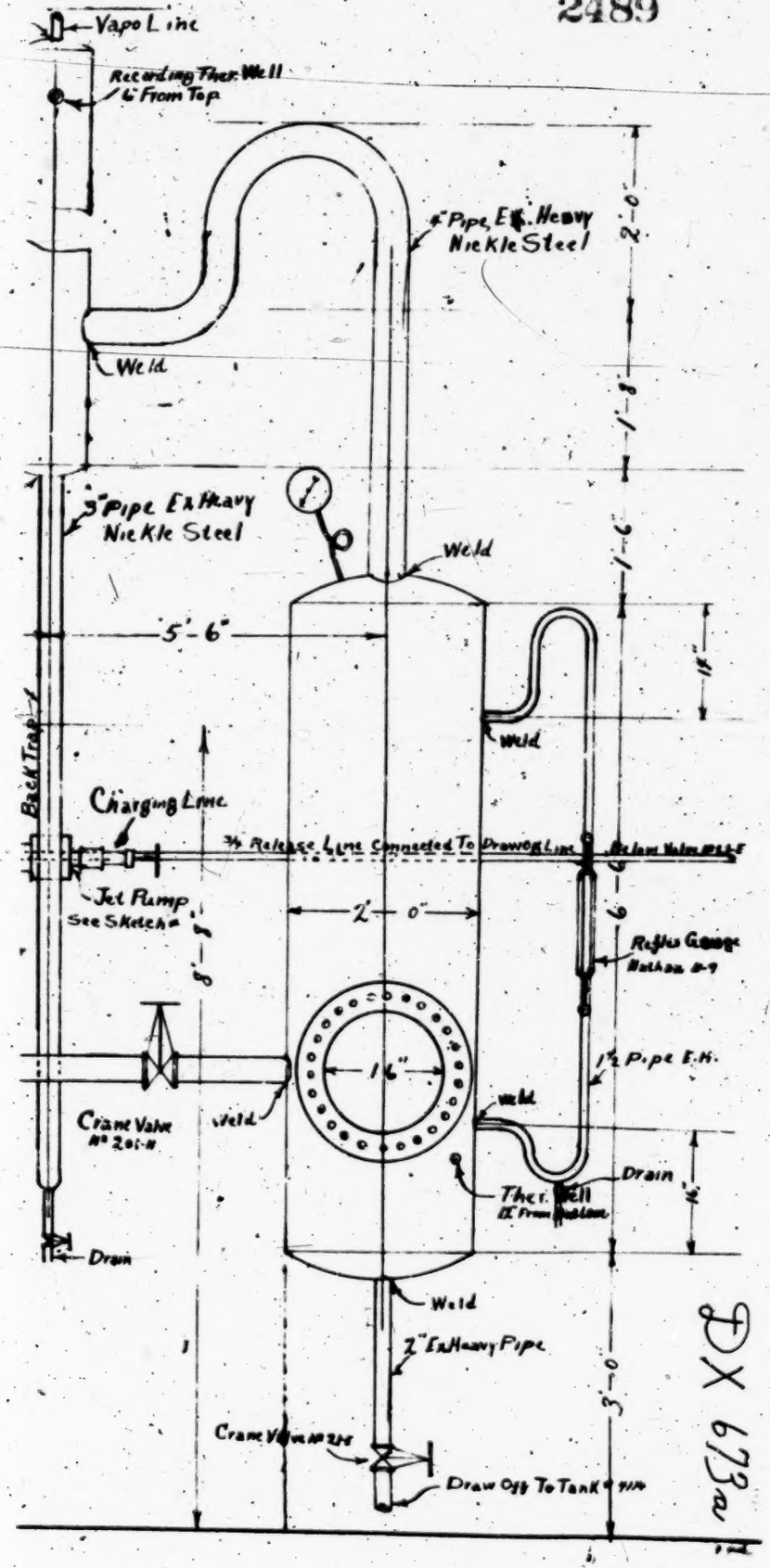
Return Bends - Forged. 6"x6"x13"

Gskets - Copper Wire Rings Made Of [illegible] Wire

DX 673a

THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION
UNIVERSAL OIL PRODUCTS CO.
vs.
CLARK OIL & REFINING CO.
DEFENDANT'S EXHIBIT
No. 1744
673A




Vapo Line
Recording Ther. Well
4" From Top
4" Pipe Ex. Heavy
Nickle Steel
Weld
3" Pipe Ex Heavy
Nickle Steel
Weld
5'-6"
2'-0"
1'-8"
1'-6"
18"
Back Trap
Charging Line
¾ Release Line Connected To Drowoff Line
Relief Valve #244F
Jet Pump
See Sketch
2'-0"
8'-8"
Regis Gauge
Nathan #9
1½ Pipe E.H.
1'6"
Weld
Crane Valve
#201-H
Weld
Drain
Ther. Well
12" From Bottom
Drain
Weld
2" Ex Heavy Pipe
Crane Valve #245
Draw Off To Tank #9114
3'-0"

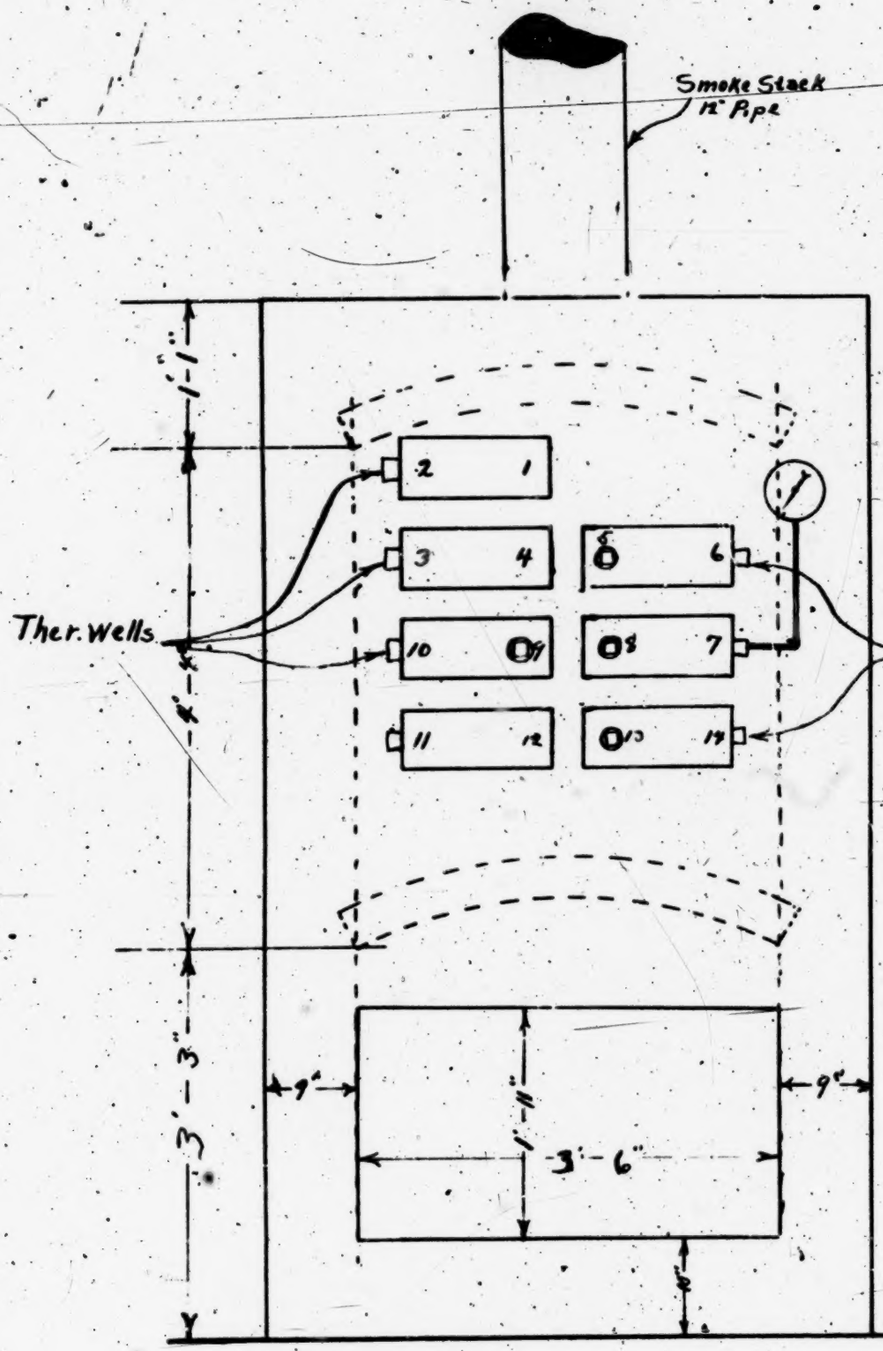
DX 673a

Sketch "23 Exp."8 Tubular Still With Decomposition Drum

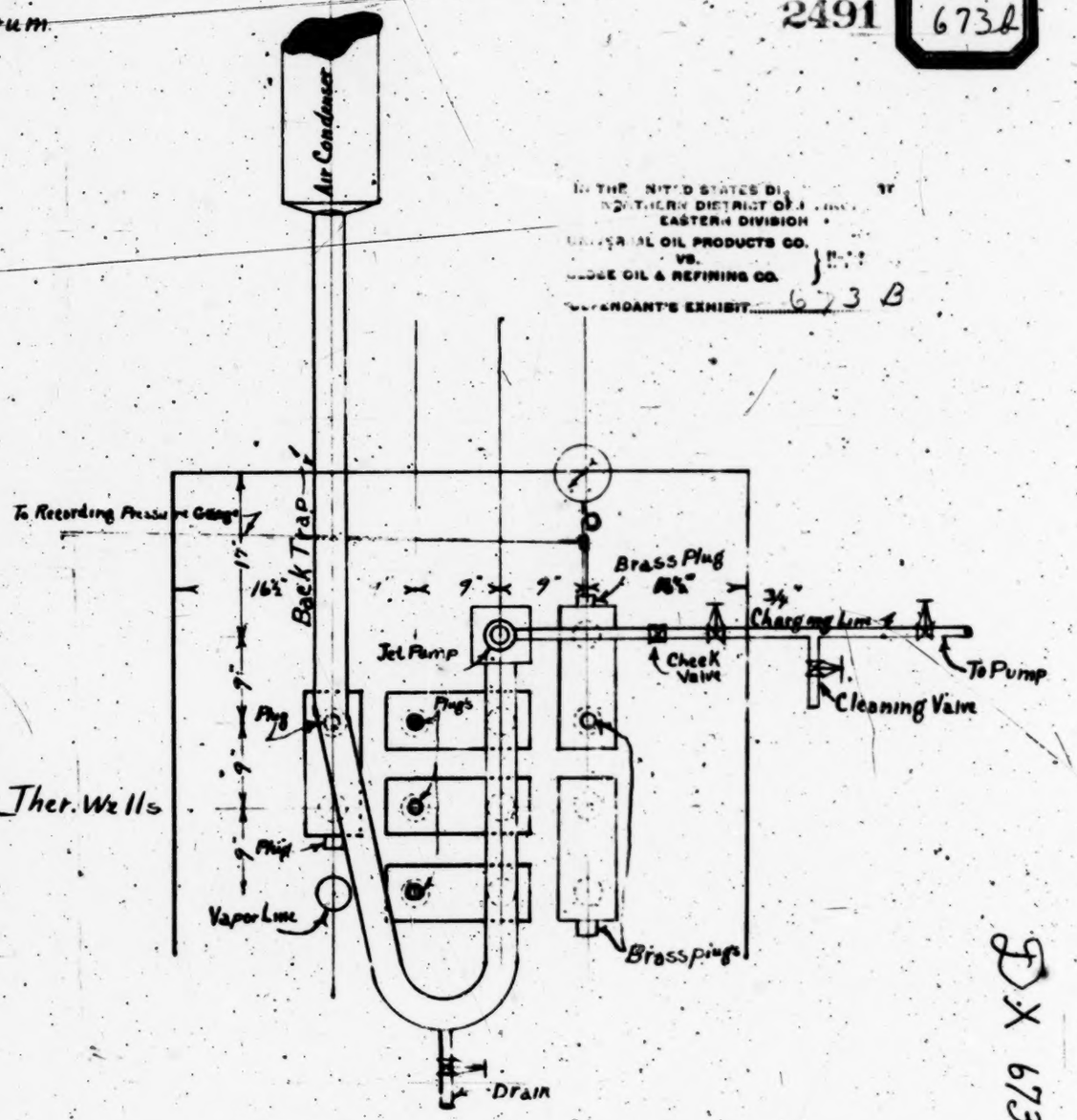
Page"2

Scale - 1"=1'.

2491 DX 673A



Front Elevation



Rear View- Showing Back Trap, Jet Pump, Charging Line- Etc.

IN THE UNITED STATES DI... T
NORTHERN DISTRICT OF ...
EASTERN DIVISION
...AL OIL PRODUCTS CO.
vs. No. ?
...DGE OIL & REFINING CO.
DEFENDANT'S EXHIBIT 673 B

DX 673A

4402 DX 674 (EXCERPT).

Physics in Everyday Life, by William D. Henderson (1921), at p. 215:

"The process by which a substance changes to a vapor is called vaporization. It may take place by boiling, by evaporation, or by sublimation."

A Text-Book in Physics, by William N. Mumper (1907), at p. 198:

"• • • Most liquids may be converted into the gaseous or vapor state by the addition of heat. This change of state, without regard to the conditions under which it occurs, is called vaporization."

Mechanics and Heat, by William B. Anderson (1914), at p. 260:

"Vaporization Defined.—Vaporization is the general term applied to the process of changing from a liquid or solid to the vapor state. Vaporization takes place in three different ways, evaporation, ebullition (Sec. 192), and sublimation • • •

"In whatever manner the vaporization occurs, it requires heat energy to bring it about, and when the vapor condenses in equal amount of heat (the heat of vaporization, Sec. 182) is evolved."

General Physics and Its Application to Industry and Everyday Life, by Ervin S. Ferry (1921), at p. 268:

"• • • The conversion of a liquid or solid into vapor is termed vaporization. Four different sorts of vaporization can be distinguished. These are evaporation, sublimation, boiling and the spheroidal state."

UNITED STATES CIRCUIT COURT OF APPEALS

For the Seventh Circuit.

I, Kenneth J. Carrick, Clerk of the United States Circuit Court of Appeals for the Seventh Circuit, do hereby certify that the foregoing printed pages contain a true copy of Volume 5 of the printed record, printed under my supervision, which, together with Volumes 1 to 4 and Volumes 6 and 7, constitutes the record upon which the following entitled cause was heard and determined:

Cause No. 7912.

Universal Oil Products Company,
Plaintiff-Appellant,

vs.

Globe Oil & Refining Company,
Defendant-Appellee,

as the same remains upon the files and records of the United States Circuit Court of Appeals for the Seventh Circuit.

In Testimony Whereof I hereunto subscribe my name and affix the seal of said United States Circuit Court of Appeals for the Seventh Circuit, at the City of Chicago, this 18th day of August, A. D. 1943.

Kenneth J. Carrick,
(Seal) *Clerk of the United States Circuit Court of Appeals for the Seventh Circuit.*